



# RESEARCH



Quarterly Newsletter  
March/April 2012

Office of the Vice President for Research

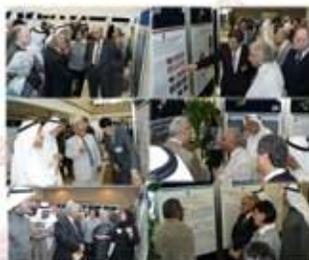
## Strengthening the foundations of research at KU

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### March 2012 Highlights

#### Events, Activities, Happenings...



**Scientific Poster Day**  
(Humanities & Sciences Faculties.....)

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**KU- UNEP 3-DAY**  
*Inception Workshop*  
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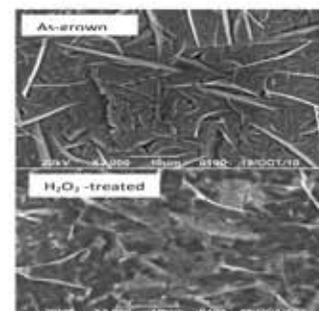


**KU-Shell**  
*Research Chair in Natural Gas*

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**Distinguished**  
**Research Series-2**  
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## RS declares winners of Humanities

Faculties of Science, Engineering & Petroleum and Women's participate in collective display of 51 posters at Scientific Poster-Day organized by the RS on March 12, 2012

*RS scientific platform brings together Humanities Sector's five-faculties for exhibiting 37 posters on March 5, 2012*



**A view of Humanities Posters Display**

The Research Sector's (RS) initiative of organizing Scientific Poster Day across KU faculties received encouraging response from humanities and sciences faculties, with a collective display of 88 posters, marking two events, held on March 5 and 12, 2012, respectively. Underlying the events was the notion of scientific openness, spreading awareness and communicating research results that could create an interactive environment for exchange of views and discussions, with possibilities of cross-disciplinary interests coinciding into new concepts and ideas for innovative research. This indeed is the intent and larger objective that RS is attempting to achieve through the periodic holding of the scientific poster-day events, by bringing together researchers on a common platform, for displaying their ongoing and accomplished research, and providing insight into the range and diversity of themes currently being researched at various faculties and departments.

The events were held under the patronage of Kuwait University President, Prof. Abdullatif Al-Bader, who inaugurated

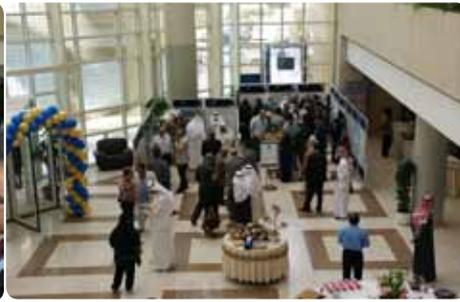


the two events, amidst the presence of Prof. Hasan Al-Sanad, Vice President for Research, and his assistants Prof. Haitham Lababidi, and Prof. Nejib Smaoui, and the distinguished faculty fraternity that included Deans, Vice Deans of participating faculties, with major turnout of professors, researchers, graduate students, participants, and viewers. Organized by the Research Sector, and supervised by Dr. Obaid Al-Otaibi, Asst. Vice President for External Collaboration, the posters events perpetuated the culture of scientific coordination, with humanities and sciences faculties joining hands in presenting their research accomplishments at the Posters' platform.

Speaking on the occasion, Prof. Al-Bader emphasized the significance of such events as markers of institutional scientific advancement and strengths, and key precursors of its sustained growth, as observed in the richness and diversity of the displayed research activity, critically reflecting the prevailing scientific intellectualism across KU faculties. This development is indeed reassuring in mapping the future dimensions of research at KU, and effectively conducive to elevating KU's standing among world renowned and respected institutions. Complementing the researchers for their scientific efforts, Prof. Al-Bader hoped the faculties would drive more energy into their respective research priorities and domains in achieving outstanding outputs of scientific and social value.

The Humanities Poster Day, held at the Education faculty premises on March 5, 2012, brought together researchers from five faculties – Arts, Business Administration, Education, Sharia and Social Sciences, collectively presenting 37 posters, in a dynamic display of scientific research evoking

# and Sciences Poster-Day events



## Sciences Posters on Display

interest and attention of an elite faculty community, experts, participants and viewers. Likewise, coordination prevailed across sciences faculties with the coming together of Engineering & Petroleum, Science and Women's Colleges, on March 12, 2012, in the joint display of 51 posters marking the sciences poster event, held at the Presidential building foyer, Khaldiya.

For RS, the observed coordination in faculties display of research activity is a welcome development in transcending

disciplinary bounds, and opening opportunities for joint and collaborative studies through shared interests and expertise. A path is, consequently, being laid towards enhanced communication among researchers as nurturing grounds for innovative ideas to emerge that could crystallize into new projects and collaborative studies, a desired objective that RS is seeking to accomplish through its posters platform. The periodic holding of scientific poster day is, therefore, a conscious move for enhancing coor-

inated scientific activity among faculties, with researchers from diverse disciplinary streams coming together for dedicated research, and actively participating in open display of their research activity for public viewing, and benefiting from expressed opinions, as grounds for new ideas and concepts for advanced and innovative research.

Elaborating on RS Posters Day initiative, Prof. Hasan said that the

( Contd. P.5...▶ )

## Winners of Humanities and Sciences Poster events

### Humanities Posters Winners

#### Category: Faculty members

1. **Dr. Amar Hasan Safar**, Dept. of Curriculum & Teaching Methods, Faculty of Education.

- Dr. Tagreed Al-Qudsi, Dept. of Library & Information Science, Faculty of Social Sciences.
- Eng. Nedaa M. Qabazard, Center for Information Systems

Title of Poster:

*"Use of concept Mapping and Visual Learning Software in Education at Kuwait University."*

2. **Dr. Amal H. Al-Ajmi**, Dept. of Curricula & Teaching Methods, Faculty of Education.

Title of Poster:

*"The Study of comparing the level of numerical senses and Mathematical talents of sixth grade students in government and private schools in Kuwait."*

3. **Dr. Husain Al-Ansari**, Dept. of Library and Information Science, Faculty of Social Sciences.

Title of Poster:

*"Application of Information and Communication Technologies in Special Libraries in Kuwait."*

#### Category: Teaching Assistant

1. **Dr. Amthal Hadi Al-Huwaila**, Dept. of Psychology, Faculty of Social Sciences.

Title of Poster:

*"The Psychological treatment ways for female prisoners in Kuwait and the social services provided to them."*

2. **Dr. Mizna Saad Al-Azmi**, Dept. of Origins of Education, Faculty of Education.

Title of Poster:

*"The education contribution of media in spreading the environmental awareness from the KU students perspective."*

( Contd. P.5...▶ )

Honoring event reaffirms RS strategy of motivating faculties towards scientific innovation and creative excellence

## RS honors latest batch of US Registered Patent recipients for their scientific inventions

The Research Sector honored the latest batch of US Registered Patent recipients, having won the patents rights for their scientific inventions based on their distinguished research. The event held on January 17, 2012 at the Research Sector, aimed at awarding the patent winners with Merit Certificates in recognition of their outstanding efforts in scientific innovation and creative excellence, and in bringing scientific acclaim to Kuwait University. The patent winners were from the Faculties of Engineering & Petroleum, and Science, and included Dr. Sobeeh Al-Mukhaizim and Dr. Ozgur Sinanoglu who won the patents rights for their research on “*Circuit and Method Providing Dynamic Scan Chain Partitioning*” (Patent No. US 7,937,634 B2, dated May 3, 2011); Dr Sami Habib and Dr. Maytham Safar winning patent rights for their research on “*Capacity planning Tool for the Web*” (Patent No. US 7,970,824 B1, dated June 28, 2011); and Dr. Ozgur Sinanoglu and Dr. Sobeeh Al-Mukhaizim who won patents rights for their invention on “*Circuit and Method for increasing Scan Cell Observability of Response Compactors*” (Patent No US 8,006,150 B2, dated August 23, 2011). According to the United States Patent and Trademark Office communication,

the patent rights achieved by these inventors prevents all others from making, using or selling these inventions throughout US, including importation.

Together, with the previously announced three patents won by Dr. Tareq Al-Bahri and Dr. Ozgur Sinanoglu, Kuwait University Faculty members have so far won six US registered patents, within a span of one year, with their research generating patentable outputs of international significance. These inventions, apart from reflecting on the quality of research at Kuwait University, significantly demonstrate how the faculties creative efforts are culminating in scientific discoveries of international acclaim, meriting befitting honors, and increasingly diverting worldwide attention to the quality and standard of research at Kuwait University. The effectiveness of these accomplishments is visible in the growing number of faculty requests for RS patent Office services for registering their scientific inventions, and protecting their intellectual property. The patent office has so far processed 46 applications for the needed technical checks, of which 33 patent requests have qualified for American Patents Office filing number, and one application

forwarded to GCC countries Patents Office.

Three of the remaining requests were under-process for technical checks, one request was withdrawn, five were cancelled on respective researchers' request, and three applications were frozen in compliance to researchers request for further studies.

These figures demonstrate how quality assurance in faculty research is steadily gaining momentum, with researchers efforts providing the potential basis for scientific inventions of commercial viability, significantly uplifting the quality index in KU research. A changing climate is increasingly being perceived as a result, signaling a reassuring trend towards quality improvements in faculty research, a norm which RS is ardently promoting across faculties through supportive measures to encourage scientific innovation and creative excellence.

The honoring event organized by RS is the conscious move in this direction, reaffirming institutional strategy of awarding researchers for their efforts in achieving international distinction on grounds of their scientific research. While commending the patent winners for their distinguished research, Prof. Hasan Al-Sanad, Vice President for Research, distributed the Merit Certificates, hoping that the researchers would carry forward their scientific



### Patent Recipients



▲ Dr. Sobeeh Al-Mukhaizim



▲ Dr. Ozgur Sinanoglu



▲ Dr. Maytham Safar

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RS declares winners of Humanities and Sciences Poster-Day events..(From.... P.3)

posters' platform was intended to open scientific doors among faculties and departments, providing the much needed stimulus to researchers to profile their scientific activity, and develop an interactive aptitude of working together in addressing strategic concerns in *basic, applied* and *humanities* sciences, that are imperative in national context, strategic to advancement, and beneficial to society. RS would, therefore, continue its endeavor in involving faculties in exhibiting their research activity through scientific events, and would remain the key facilitator in encouraging joint coordination among faculties through multi-faculty involvement, input and participation.

The displayed posters have been assembled into an integrated document, preserving the humanities and sci-



ences faculties research interests and accomplishments, as a key reference on 2011/12 scientific posters activity. The 37 Humanities posters profile actual images of the scientific work displayed by the participating researchers from five faculties, with faculty-wise poster-distribution accounting for five posters from Arts, three from Business Administration, 10 from Education, 11 from Sharia, and eight from Social Sciences.

Likewise, the 51 Sciences posters include 18 posters from the faculty of Engineering & Petroleum, 26 from Science faculty and seven from Women's college.

The cumulative document, apart from profiling the faculties scientific activity, provides revealing insights into major themes, currently being addressed by the Humanities and Sciences sectors, with displayed research activity exhibiting broad trends in faculty research at KU, with some studies accomplished, several others being pursued, and still others taking root with new concepts and ideas emerging through scientific interaction and exchange. The events successfully culminated, with the displayed posters reviewed by specialized committees, set up for humanities and sciences posters events, leading to short-listing of award winning humanities and sciences posters, listed below:

3. **Dr. Nora S. Al-Subaie;** Dr. Maryam Al-Shammeri  
Dept. of Curricula and Teaching Methods, Faculty of Education.

Title of Poster:

*"The pressure of teaching loads in the effectiveness of the teacher assistants thinking abilities in Kuwait University."*

**Category: Graduate Students**

**Muna Hathal Al-Dabasi,** Dept. of Administration Educational Planning, Faculty of Education .

Title of Poster:

*"Alternatives in financing the higher education governmental institution in Kuwait under the light of economical and education challenges."*

**Sciences Posters Winners**

1. **Dr. Esam M. Al-Awadhi,** Dept. of Mechanical Eng. Faculty of Eng. & Petroleum.

Title of Poster:

*"Using phase change materials in window shutter to reduce the solar heat."*

2. **Dr. Wafa Al-Kandari;** Dr. Suzanne A. Al-Bustan, Asha M. Issac, Babitha A. George & Betty S. Chandy, Dept. of Biological Sciences, Faculty of Science .

Title of Poster:

*"Molecular identification of Austroilharzia sp. (Digenea: Schistosomastidae) from Kuwait Bay."*

3. a) **Dr. Mohamed F. Yassin;** Dr. S. Almouqatea, Dept. of Environmental Technology Management, Faculty for Women.

Title of Poster:

*"Assessment of airborne bacteria and fungi in an indoor and outdoor environment."*

- b) **Dr. Mohamed F. Yassin;** Dr. Mosaab M. Al-Awadhi Dept. of Environmental Technology and Management, Faculty for Women.

Title of Poster:

*"Impact of sulphur dioxide emissions of power stations on ambient air quality."*

**RS holds a 3-day Inception Workshop on Environment**

**KU enters into collaborative partnership with UNEP for conducting research on “Assessing impacts of climate change and its adaptation to Kuwait”**

The Research Sector took yet another fundamental step in entering into collaborative partnership with the United Nations Environmental Program (UNEP) in advancing scientific research in the sphere of sustainable environment, an area of high priority and interest to Kuwait University. A determined step in this direction was taken with the signing of the requisite Memorandum of Understanding (MOU) with UNEP on Aug. 23, 2011, laying the fundamental basis for KU-UNEP cooperation for conducting research on “Assessing impacts of, and adaptation to climate change in Kuwait.” The project typically focuses on monitoring the potential impacts of climate change across the Arab Region, an issue of immense significance to world nations, and especially to Kuwait in view of its geographic location, oil dependency, coastal extension, scarce natural resources, especially renewable freshwater, necessitating the need for assessing impact of climate change, an aspect not studied before.



▲ Inception Workshop in progress

Having signed the MOU, the collaborative partners (KU-UNEP) have already moved ahead in formalizing the Agreement by signing “Small Scale Funding Agreement” (SSFA) opening the door for KU and UNEP to cooperate in the project “Initial National Convention to the UN Framework Convention on Climate Change” (UNFCCC).

Speaking on the occasion of the “Inception Workshop for the Vulnerability and Adaptation Group,” held at Kuwait University, during Dec. 27-29, 2011, Prof. Hasan Al-Sanad, Vice President for Research, outlined the main goals of the agreement to be training Kuwaiti Nationals, building specialized research expertise in the

field of evaluating impacts of climate changes in The State of Kuwait, and ways of adapting to them, as this issue was one of the national priorities of

profound significance to Kuwait, as well as its international commitments.

The Workshop participants involved KU Team, V & A Task Force, EPA representatives, and Meteorology Office, with a series of

sessions highlighting diverse aspects of environment, guidelines, approaches and methodologies concerning assessment of climate change impacts on water resources, TORs, national circumstances, climate modelling, dust storms and public health, work plan, followed by discussions and Q & A sessions.

It is significant to mention here that Kuwait is a signatory to the environment convention, the United Nations Framework Convention (UNFCCC), which provides the framework for international cooperation in combating climate change, making it mandatory for each signatory Party to the Convention to report on three dimensions of climate change manifestation concerning:

- Greenhouse Gas (GHG) emissions which cause climate change,
- Extent of impacts and vulnerabilities to climate change, and
- Efforts and additional needs of the Party to effectively cooperate in combating climate change.

(Contd. on ... P. 9)



▲ A View of the Participants

RS announces *new funding levels* for research projects

## Research Sector incorporates newly defined budgetary requirements in its Research Support System to further facilitate researchers

The Research Sector continued its drive to further facilitate researchers in accomplishing high quality research through appropriate reformatory measures with the recently approved enhanced scientific mission coverage on awarded projects. The raised travel allowance for various destinations is intended to facilitate researchers in fulfilling their mission obligations, and scheduled for implementation starting from April 1, 2012.

The underlying purpose is to provide requisite opportunity to researchers in gaining international exposure in their respective research domains, and effectively apply new knowledge in accomplishing their research objectives, as part of RS enduring policy to encourage researchers to enhance their scientific horizons through participation in international conferences and scientific forums, with the expectations that the researchers would draw benefit from latest advancements in their field, and explore possibilities of collaborative research, through contacts with experts in the field.

Such missions on projects are subject to KU policy and processes, and governed by standard procedures, uniformly ap-

Raised mission allowance, covering various destinations, to be implemented from April 1, 2012

plied to all projects. The newly raised mission allowance is specified below:

### Raised Mission Allowance

1. **From KD 1,750 to KD 2,500/** for Far East countries, North and South America, Australia, New Zealand and South Africa.
2. **From KD 1,400/- to KD 2,000/-** for European countries, South East Asia and Africa.
3. **From KD 900/- to KD 1,200** for Middle East, Arabian Gulf and Egypt.

Following the raised mission allowance, the existing funding levels in the research support system were duly restructured to accommodate newly devised mission requisitions. Accordingly, the newly defined funding levels for grant awards, as incorporated in the research support system, for facilitating faculty research, are as follows:

### New Funding levels

- Projects with budget **up to KD 4,000/-** such projects have limited objectives, shorter span and are reviewed by **one internal referee**, selected by the VDR or RS, as per VDR's desire, with the PI having the option for an external or internal referee.
- Projects with budget ranging from **KD 4,000/- to 10,000/-** are relatively larger in scope and objectives, have longer duration, and are refereed by **two external referees**, selected by RS.
- Projects with budget **above KD. 10,000/-** are comprehensive, have generally three years duration, and are reviewed by **three external referees**, selected by RS.

These funding levels are slated for implementation from April 1, 2012, and would henceforth govern institutional grant support facilities extended to faculties for appropriately planning, pursuing and implementing their research under three explicit budgetary ranges, with faculties having the prerogative of designing their proposals, accomplishable within the newly established funding levels. □

Key lectures presented by invited speakers from  
Imam Mohammad Bin Saud University

## **RS workshop on “Writing and publishing research, and ethics of scientific research” for humanities faculties, highlights the virtues of quality, integrity and authenticity in research**

On a key initiative taken by the Research Sector, the humanities faculties recently had the opportunity to participate in a two-day workshop on “Writing and publishing research, and ethics of scientific research,” especially organized for the benefit of faculty members and graduate students of humanities colleges, to incorporate the virtues of *quality, integrity and authenticity* in their research endeavors, and target high ranking journals for publishing their scientific outputs. The workshop, held under the patronage and presence of Kuwait University President, Prof. Abdullatif Al-Bader, marked the serious intent and effort of the Vice President for Research, Prof. Hasan Al-Sanad, to raise the spectrum of humanities research and provide a stimulating environment for developing faculty members potential and capabilities in pursuing advanced and innovative research. Consequently, the conceptual frame of the workshop was evolved by Dr. Obaid Al-Otaibi, Asst. Vice President for Research, whose diligent efforts led to the accomplishment of a highly successful workshop, in line with RS current policy of strengthening humanities research, with key lectures presented by a team of specially invited speakers from the University of Imam Mohammad Bin Saud, Riyadh, Saudi Arabia, and included Prof. Abdullatif Bin Homoud Al-Nafii, Dept. of Geography, Dr. Saleh Bin Hamad Al-Assaf, Faculty of Education, and Dr. Mohammad Al-Hamoumi, Dept. of Psychology, Faculty of Science.



▲ *Writing and publishing research workshop in progress*

**“Knowledge generated through research holds the key for development”**

Speaking on the occasion, Prof. Bader emphasized the significance of research for development, as science broadens our critical thinking, vision and knowledge, which spurs development. It is the knowledge generated through research that holds the key for development, and it is imperative that the university stimulates faculties and students to cultivate the habit of scientific thinking, to develop their intellectual horizons and effectively contribute to development. While according a warm welcome to the Saudi delegates from Imam Mohammad Bin Saud University, Prof. Bader hoped that such scientific interactions would add critical value to our scientific understandings, enriching our knowledge, with the workshop hopefully serving that vital purpose.

Elaborating on the scientific purpose of the workshop, Dr. Obaid Al-Otaibi said that the workshop primarily aimed at sensitizing the participants on scientific writing and publishing research, including appropriate selection of journals for

publishing distinguished papers, taking due care of ethical concerns, while honestly reporting the results as published papers. The workshop addressed these aspects through a series of lectures, which included, “The stage of preparing scientific research,” presented by Prof. Al-Assaf; “Preparing and publishing scientific articles in the international scientific journals,” by Dr. Al-Hamoumi; and “Scientific integrity in internet era,” which Prof. Al-Nafii outlined. The lectures were followed by discussions, and question/answer round, where participants’ queries were addressed by the experts panel. The interactive workshop sessions created professional bonds among colleagues and participants, stimulating fruitful scientific exchange and sharing of views on scientific research and development. The holding of such seminars and workshops are indeed vital in a university environment to gain new scientific perspective and expedite development.

The workshop primarily focused on key concerns as regards preparing a  
**(Contd. on ... P. 24)**

## KU-Awqaf headed towards valued partnership

### *RS outlines the framework of "Proposed Endowment Project" to Awqaf Secretariat's visiting delegation*

The Research Sector organized a meeting on Endowment for the visiting delegation from the Awqaf Secretariat, headed by Dr. Abdel Mohsin Al-Kharafi, Secretary General of Awqaf, accompanied by Mr. Khalid Al-Bishara. The meeting was chaired by Prof. Hasan Al-Sanad, Vice President for Research and his Assistants, Prof. Haitham Lababidi, Prof. Nejb Smaoui, and Dr. Obaid Al-Otaibi, and attended by Mr. Nasser Hashim, Director Administrative Financial Affairs. The meeting centered on Endowment possibilities and mechanism and modalities for the support and sustenance of specialized research and studies concerning dominant national, social and scientific concerns that hold direct relevance to society and are significant to national and development needs.

The highlight of the meeting was a presentation made by Dr. Obaid concerning the proposed Endowments at Kuwait University and the potential partnerships that would steamroll the project, with long-term implications for research sustainability at KU, on lines of distinguished international universities.

Essentially, the endowment is envisioned as a perpetual reservoir of resource support, providing a solid basis for advancing scientific research at KU, and



▲ *Presentation on Proposed KU-Awqaf Partnership*

*Support and sustenance of specialized research that benefits society main goal*

enhancing institutional competence and capabilities for generating outputs of human value. Given this broad purpose, the proposed Endowment Fund opens the door for institutions, industry and individual donors, driven by the notion of social responsibility, to be the direct

participants and fund providers nurturing the Endowment, for KU to pursue specialized studies and strategic priorities that serves mankind.

The objective requirements of this mission has provided the framework for a valued KU - Awqaf partnership, for the realization of the proposed Endowment, and working out a viable strategy for the management of Endowment Fund, including issues concerning the revenues flowing back into the Endowment Fund. The meeting culminated with the consensus to organize same presentation on KU Endowment project for the Awqaf Endowment Committee of the General Secretariat, for accomplishing the collaborative mission. □

### **KU enters into collaborative partnership with UNEP ... (From.... P.6)**

It is in this context that Kuwait University's collaboration with UNEP, and EPA involves determining impacts of climate change, and its adaptation to climate change in Kuwait, with KU being responsible for accomplishing following activities:

- Assessing Impacts of Climate Change on Water Resources, Coastal Zone, Climate and Public Health, by examining historical and observed climate in Kuwait, determine trends, and apply

global climate models to assess what the climate in Kuwait would be in 2100.

- Adaptation Strategy for Kuwait based on conclusion of assessments, so as to propose strategies for coping with changing climate.
- Description of national socio-economic and environmental circumstances and how climate change might influence sustainable development objectives.

- Assessing technological, financial and capacity needs for addressing climate change, and generating climate action-plan for the State of Kuwait.

The project is especially significant to KU, falling within the purview of Research Priorities, and is expected to establish a solid foundation for research program in this area, apart for training Kuwaiti nationals, and for organizing requisite meetings and seminars. □

## Kuwait University and Shell establish Research Chair in natural gas at the College of Engineering & Petroleum

*A Shell initiative to contribute to Kuwait's expanding Gas Industry*

Kuwait University and Shell entered into strategic agreement for establishing the *Research Chair in Natural Gas* at the Professor level, at the College of Engineering and Petroleum, that would focus on the development of research and teaching program for the safe and efficient management of natural gas fields in Kuwait. Specifically known as the “*Shell Natural Gas Chair*,” the agreement was formalized on January 11, 2012, with its official signing by Prof. Abdullateef Al-Bader, President, Kuwait University, and Mr. Ahmad Atallah, Chairman, Shell Companies in Kuwait. The event marked the culmination of a long and ongoing talks between KU and Shell, centered on developing natural gas resource, the conceptual basis for which was initiated by Dr. Ali Akbar, Chairman, Petroleum Engineering Department, with long standing experience and expertise in the field.

tracting world renowned scientists and international experts who could strengthen the institutional scientific foundations through their expertise, experience and



▲ **Formalization of KU-Shell Partnership**

*Opening opportunities and avenues for advancing research in the sphere of natural gas in Kuwait*



▲ **A view of participants at KU-Shell meeting**

Speaking on the occasion, Prof. Abdullateef Al-Bader, said that Kuwait University has added a significant new international dimension to its scientific programs by launching the Research Chair program during June 2010, providing the legitimate basis for at-

Natural Gas Chair at Kuwait University, to energize scientific research in the sphere of sustainable energy, and strengthen institutional potential and capabilities in the field through advanced research, training and knowledge-sharing. Continuing further, Prof. Bader said,

*“I anticipate, a new generation of Kuwaiti engineers, nurtured in a scientific environment, developing specialized skills in the field of natural gas, and assuming key roles in developing and advancing the indigenous gas industry, the vital energy resource for the State of Kuwait. With Shell Natural Gas Chair, we take our first step in this direction, and express our sincere thanks to Shell for providing the avenue and opportunity for raising the spectrum of scientific research at KU.”* Continuing further, he said, *“research has to be the cornerstone of development, and this agreement is vital as regards what we can offer to the society.”* The Research Chair has opened the door for KU to look for the best expertise in the field of Petroleum Engineering, for stimulating research and postgraduate teaching, and accelerating the development process. He further said that, *“It is my ardent ambition to see our students as ambassadors of Kuwait in positions of responsibility in foreign universities, a vision that we should all work together to achieve.”*

**(Contd. on ... P. 11)**

## KU-Shell Research Chair...(From.... P.10)

► Elaborating on the purpose and expectations of the Natural Gas Chair at Kuwait University, Prof. Hasan Al-Sanad, Vice President for Research, said that *"our objective is to create an enabling environment that could encourage scientific research in the field of natural gas, a valued energy resource for the State of Kuwait."* The intent is to bring home the benefit of established scientists in the field of natural gas, by offering a dedicated research chair, which would critically involve them in advancing research in the sphere of natural gas, enriching our capacity and capabilities in the field. Our expectations are to advance R & D potentialities in the field, and enable young Kuwaiti engineers to acquire specialized skills and scientific sophistication in exploring and exploiting this natural resource for the benefit of Kuwait and the society. Kuwait University, therefore, looks forward to the implementation of the *"Shell natural Gas Chair"* at the College of Engineering & Petroleum in partnership with Shell, with KU-Shell agreement marking a

defining step in that direction. In the words of Ahmad Atallah, Chairman, Shell Companies in Kuwait, *"This new initiative is part of our ongoing partnership with Kuwait University, and our commitment to supporting Kuwait in laying the foundations of a sustainable energy future."* Natural gas is a critical resource for Kuwait, hence the successful and efficient exploitation of this major resource depends heavily on the use of advanced technology and skilled engineers. *"The Shell Natural Gas Chair would establish a specialized research program in Natural Gas, providing a learning platform for young engineers to gain valuable background and knowledge needed to continue the future development and growth of this important industry in Kuwait. Shell is committed to*



▲ KU-Shell meeting in progress

*helping the next generation of Kuwaiti engineers to tackle natural gas-related challenges professionally, so that they are equipped with the right skills when they enter the business world."*

Shell's contribution over three years aims at establishing an academic and research program in Natural Gas Studies. The *"Shell Natural Gas Chair"* is intended to develop and sustain an internationally recognized research program in Natural Gas Studies, while overseeing long-term development and delivery of related academic goals at Kuwait University, and its wide recognition in the Gulf region and beyond. □

## RS honors latest batch of US Registered Patent recipients ...(From.... P.4)

► accomplishments through enhanced creativity, targeting higher levels of distinction and scientific sophistication, and transferring their creative work into marketable products. Apart from the patent winners, also present at the event were Prof. Haitham Lababidi, Dr. Obaid Al-Otaibi, and Prof. Ibrahim AbuEllail. The recipients of US Registered Patent are listed below:

- Dr. Sobeeh A. Almukaizim and Dr. Ozgur Sinanoglu, Faculty

- of Engineering & Petroleum and Faculty of Science, Patent awarded for following invention *"Circuit and Method Providing Dynamic Scan Chain Partyitioning"* (Patent No.: US 7,937,634 B2 dated May 3, 2011),
- Dr. Sami Habib and Dr. Maytham H. Safar, Faculty of Engineering & Petroleum, Patent awarded for following invention, *"Capacity Planning*

*Tool for the Web"* (Patent No: US 7,970,824 B1, dated June 28, 2011).

- Dr. Ozgur Sinanoglu and Dr. Sobeeh A. Almukhaizim, Faculty of Science and Faculty of Engineering & Petroleum, Patent awarded for following invention *"Circuit and method for increasing Scan Cell Observability of Response Compactors."* (Patent No. US 8,006,150 B2, dated August 23, 2011). □

*Revisits aimed at sensitizing faculties to the revamped grant system's privileges, alterations and benefits*

RS revisits *humanities faculties* for invigorating their participation in KU grant support system to achieve the goals of institutional research as equally competitive partners

The Research Sector (RS) executive visits to all KU faculties, undertaken during the period April through June 2011, had laid the framework for a continuous process of confidence building among faculties in KU's Research Support System, as a basis for advanced and innovative research, so that institutional scientific foundations could be enriched, and KU standing among world renowned universities be elevated. The significance of this mission entailed a serious look at the views expressed during the executive visits, and to take appropriate measures that could invigorate the scientific process across faculties, drawing them as equally competitive partners in uplifting the status and standard of research at KU. The accomplishment of this mission rested on faculties enhanced participation and performance in research for generating distinguished outputs of international compatibility, requiring RS to configure measures conducive to high quality research. Considering that the earlier faculty visits opened a significant doorway for researchers to voice their views and concerns on research-related matters, it also provided RS the opportunity to gather first-hand information on the core issues that affected faculties' optimized performance in research activity due to procedural implications. It became increasingly apparent that

the system needed refinement and supportive outlook to smoothen the awards process for faculties enhanced participation in research.

Consequently, the research processing system was reviewed, and a mechanism evolved for simplifying the processing steps, especially concerning small budgeted projects up to KD 2,500/-, for expediting grant review and approvals. The new processing plan, evolved for this purpose, removed several steps, shortening the procedural pace for rapid clearance of projects, so that faculties could take advantage of the revamped grant system's ease. Several other measures were also instituted alongside, that offered a range of facilities and benefits for encouraging researchers' participation in institutional re-



▲ Participants from Business Administration

search, that were introduced with the onset of the academic year 2011/12. RS was, therefore, in a state of readiness to sensitize faculties to the new system's privileges, alterations and benefits, by revisiting the scientific faculties in continuity, presenting the outlook of refined grant support procedures that favored the researchers aspirations for pursuing advanced and innovative research, starting with the humanities sector, in the second semester of the current academic year. The purpose was to relay information on latest services offered by RS, which were far more facilitative and attractive for pursuing high quality research, especially encouraging the humanities faculties, whose share of research grants required a



▲ Participants from Education Faculty

(Contd. on ... P. 13)

## RS revisits Humanities Faculties ...(From.... P.12)

measurable boost to reach a competitive level, considering that its existing research participation stood at 13% of the total funded research activity at KU.

An ample scope, therefore, existed for humanities faculties to invigorate their research graph through greater participation in institutional research, by pursuing ventures of strategic significance to developmental needs and priorities. RS revisit to humanities colleges was transpired by this compelling need to reach out to the faculty members, and to encourage them to take advantage of the latitude that the new and supportive measures offered, to accomplish their current and future projects in an encouraging and flexible environment. Since RS mission remains involving faculties in the pursuit of high quality research, it becomes increasingly imperative that the humanities faculties be equally competitive partners alongside the scientific faculties, in developing institutional research potentialities and capabilities through their scientific caliber and accomplishments. RS anticipates that the revisit to humanities faculties will generate encouraging response from the concerned faculties towards investing their talent and energies in carrying forward the scientific process at KU through advanced and innovative research.

RS executive team, revisiting the humanities colleges,

included the Assts. Vice President for Research, Dr. Obaid Al-Otaibi, Prof. Haitham Lababidi and Prof. Nejib Smaoui, who met the faculty members from Arts, Education and Sharia faculties at the seminar room of Dr. Abdullah Al-Otaibi building, Faculty of Arts, Keifan campus on Dec. 21, 2011. The second meeting was held at the International Hall of Social Sciences faculty at Shuwaikh campus on Dec. 26, 2011, where the executive team met the faculty members from the colleges of Law, Social Sciences and Administrative Sciences. The key issues in both these meetings concerned the improvements and enhancements incorporated within the grant support system as facilitative measures for researchers benefit, which included:

1. Instituting new incentive scheme, approved by the University Council, to facilitate researchers in small-project related purchases, by granting them the incentive of KD. 250/- for the project's first year, KD 150/- for the second year and KD 100 for the third year,
2. Simplifying procedural steps concerning the processing of small projects, with budget less than KD 2501/-, to expedite grant review and approval.



▲ Participants from Law Faculty

3. Raising mission allowance to enable researchers in meeting their project-related mission commitments, based on University Council's decision, approving the raised mission allowance.
4. Employing Kuwaitis on research projects, based on the approval granted by the University Council.
5. Launching the "Research Chair" & "Postdoctoral Fellowship" programs, following University Council's approval. Both programs are being implemented, and humanities faculties are encouraged to benefit from these programs.
6. Implementing the e-system for Research Support Application, to facilitate researchers in online submission of proposals.

These issues led to interesting round of discussions, raising the faculties optimism, with RS team providing the needed clarifications, and addressing researchers queries. The meetings concluded with RA's executive team thanking the faculty members for their enthusiastic response and participation. □

## Research Reward Recipients

Continuing the series on Distinguished Research achievements of Kuwait University faculty members in advancing scientific research, the Research Sector brings the next consignment of Research Reward recipients for readers attention, highlighting their award-winning scientific research published in international refereed journals of high impact, as per Journal Citation Report (JCR) ranking. Series – 2 carries forward the summary highlights of the faculty members research outputs from *funded* and *unfunded* research, published in accredited international journals of repute, and meriting excellence in project final report. Essentially, the distinguished research series outlines RS strategy of widely sharing the scientific information and new knowledge, generated through faculties high quality research endeavors, as a conscious move towards spreading awareness on institutional scientific accomplishments and R & D activity.

Given this purpose, Series – 2 focuses on *next four beneficiaries* of research reward incentives, presenting summary view of two recipients of funded research, one for unfunded research, and one for excellence in project final report. The research summary has been provided directly by the reward recipients, outlining their research objectives, findings and significance for the benefit of scientific community and the wider public. This issue of the OVPR Quarterly Newsletter includes the research accomplishments of Prof. Ali Rakhshani (Funded Project SP01/06) from Physics Dept., Faculty of Science; Dr. Jehad Al-Dallal (Funded Project WI04/08), Dept. of Information Science, Faculty for Women; Dr. Areej Al-Khabbaz (Unfunded research), Dept. of Surgical Sciences, Faculty of Dentistry; and Prof. Ali A. Dashti (Project Final Report - NM01/06), Dept. of Medical Laboratory Science, Faculty of Allied Health Sciences. The basis of research inclusion remains *first-come, first-served*. (Kindly Note: The summaries, findings and views expressed herein are entirely those of the researchers).

### *The role of MS and MIS devices in characterization of electrodeposited ZnO:Ga films*

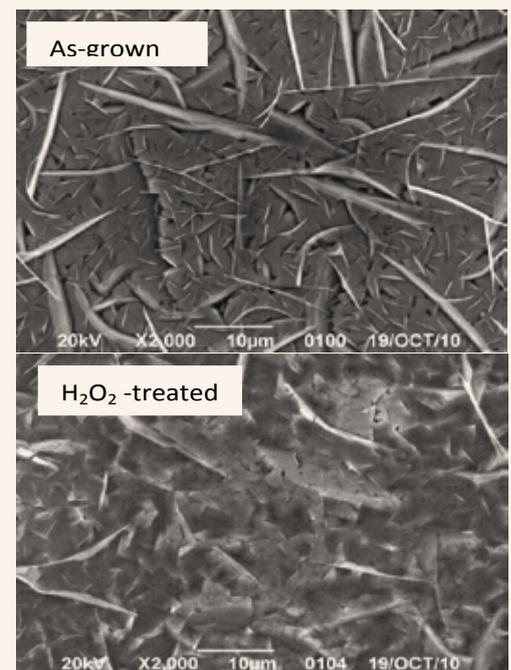
*Prof. Ali E. Rakhshani\* and S. Thomas*  
*Physics Department, Faculty of Science*

(Project No.SP 01/06)

Zinc oxide, ZnO, is a promising material for electronic and UV-optoelectronic applications. This is due to its free exciton binding energy (60 meV) which is more than twice the binding energy of free exciton in GaN. GaN is presently used in most semiconductor-based blue and UV light emitters. ZnO also has many other advantages, such as the availability of large area native substrates, amenability to low-temperature growth and wet chemical etching and high radiation resistance. In addition to optoelectronics, ZnO has a wide range of applications in spin functional devices, gas sensors, transparent electronics and surface acoustic wave devices. Thin films of ZnO can be prepared by various techniques from the vapor

phase and from solutions. The solution-based methods, like electrodeposition, are simple and cost effective routes. Thin films and free-standing ZnO nano-rods can be electrodeposited on various conducting substrates. Electrodeposited ZnO has an intrinsically large n-type resistivity. Growing films with a low n-type resistivity is desirable for most of the applications. In this study, the films resistivity could be reduced by a factor of about 1 000, introducing Ga dopants into the electrodeposition bath.

The resistivity and the free carrier concentration in electrodeposited films cannot be measured using the traditional four-probe and Hall-effect techniques which require non-conducting



SEM surface view of a ZnO film grown on stainless steel substrate.

(Contd. on ... P.15 )

## Impact of Inheritance on Class Cohesion Measurement

Dr. Jehad Al Dallal

Dept, of Information, Faculty for Women

### Research Objectives

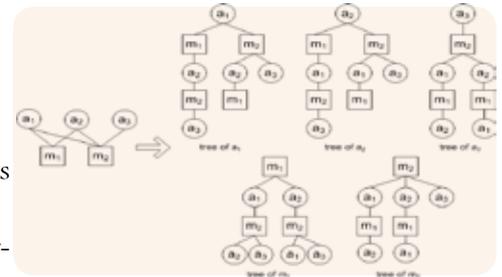
The building of highly cohesive classes is an important objective in object-oriented design. Class cohesion refers to the relatedness of the class members, and it indicates one important aspect of the class design quality. A meaningful class cohesion metric helps object-oriented software developers detect class design weaknesses and refactor classes accordingly. Several class cohesion metrics have been proposed in the literature. Some of these metrics suggest considering inheritance in the cohesion calculation without empirically studying the impact of inheritance on the cohesion calculation. In this research, I empirically studied the effect of ignoring or considering inherited methods and attributes from superclasses of the class for which the cohesion is calculated. The impact of inheritance on several class cohesion metrics were empirically investigated using large number of classes. The goal was to explore whether considering inheritance increases the ability of these metrics to indicate cohesion more precisely.

(Project No.WI 04/08)

### Research Major Results

The major results of this research were as follows:

1. Empirically providing evidences showing that implementing the inheritance relations in object-oriented systems enhances the quality of the systems.
2. Empirically providing evidences showing that for some of the cohesion metrics, the quality indications were significantly improved when the inherited attributes were considered in the cohesion measurement.
3. The results indicate that refactoring improves the general quality of classes in terms of cohesion. The results demonstrated that some of the considered metrics have outstanding abilities to predict the presence of classes in need of refactoring.
4. Developing several software tools to automate the measurement of class cohesion

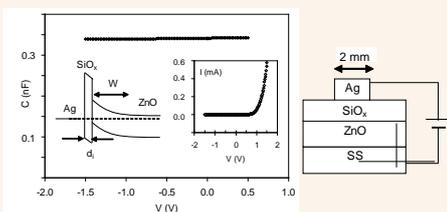


and to automate the analysis of class hierarchy.

### Research Importance

The empirical validation results provide clear idea to software engineers using cohesion metrics during software development on how to use these metrics effectively. The tools developed in this research measure the cohesion for Java classes using many cohesion metrics and can be used in industry to assess the quality of the developed classes in terms of cohesion. I hope that the obtained results will encourage the software developers in Kuwait, GCC countries, and middle-east countries, as well as other world countries to adopt the improved metrics when assessing the quality of their software products.

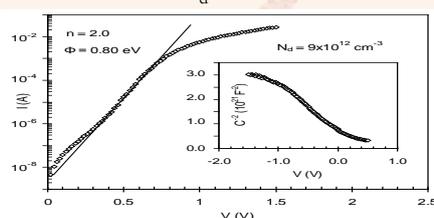
### Role of MS and MIS devices...(From.... P.14)



The capacitance-voltage and current-voltage (inset) plots for a MIS device of type Ag-SiO<sub>x</sub>-ZnO-SS. ZnO thickness is 1140 nm and SiO<sub>x</sub> thickness is 30 nm. The schematic band diagram of the device is also shown in the inset.

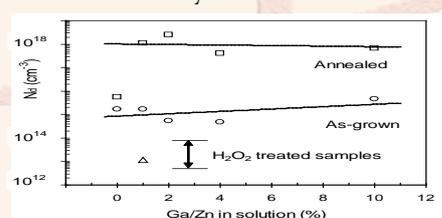
substrates. Therefore, these parameters were evaluated from the characteristics of metal-semiconductor (MS) and metal-insulator-semiconductor (MIS) devices fabricated on the films. MS and MIS devices of type Ag/ZnO and Ag/SiO<sub>x</sub>/ZnO were prepared on stainless steel (SS)

flexible substrate and their parameters were determined by means of current-voltage and capacitance-voltage measurements. Devices with a reasonably good built-in potential, barrier height and rectification factor were achieved and the concentration of donors, N<sub>d</sub>, in the films was evaluated.



The forward current-voltage and the reverse capacitance-voltage (inset) characteristics of a MS device of type Ag-ZnO-SS. ZnO was electrodeposited from a Ga-containing solution (Ga/Zn = 1%) and then etched with H<sub>2</sub>O<sub>2</sub>. The ideality factor (n) and the barrier height (Phi<sub>b</sub>) of the device and the ZnO effective donor

concentration, N<sub>d</sub>, increases from ~ 10<sup>15</sup> cm<sup>-3</sup> to ~ 10<sup>18</sup> cm<sup>-3</sup> by annealing the doped films in oxygen at 400 °C. Furthermore, it was observed that the hydrogen peroxide treatment of the films lowers the N<sub>d</sub> value by a factor of 10- 100 and yields a large electron mobility.



The donor concentration in the as-grown (□) and in annealed (○) films electrodeposited from solutions with different Ga content. Annealing was performed in oxygen (400 °C, 20 min). The range of results obtained for the H<sub>2</sub>O<sub>2</sub>-treated films (Δ) is also shown.

Knowledge about the Association between Periodontal Diseases and Diabetes Mellitus: Contrasting Dentists and Physicians

Dr. Areej Al-Khabbaz

Department of Surgical Sciences, Faculty of Dentistry

(Unfunded Research)

There is a strong body of evidence support the relationship between periodontal diseases mellitus. Patients diagnoses with diabetes are considered as a high-risk group with greater susceptibility to severe forms of periodontal destruction. Periodontal diseases are potentially progressive bacterial infection that may lead to tooth loss due to extensive destruction of alveolar bone. Many patients are unaware of the effect of diabetes on oral health. Whether health care providers are applying the information about the link between diabetes and periodontal disease in their practice will depend on the level of their knowledge of such valuable information. The prevalence of diabetes in Kuwait is reaching epidemic proportions, with serious implications for oral health. As the prevalence of diabetes continues to rise, it is expected that health care providers will be seeing and treating greater number of patients with diabetes and periodontal problems. For that reason, evaluating the clinician knowledge regarding this issue will assist in providing the appropriate level of continuing educational programs and assess for efficacy. The aims of the study were, therefore, to evaluate the knowledge of dental and medical practi-

tioners concerning the effect of diabetes on periodontal health and to find out if they are aware of the bidirectional relationship between periodontal diseases and diabetes mellitus. A total of 510 general practitioners in Kuwait participated in the study (232 physicians and 278 dentists). Although the majority of respondents in both clinician groups believed that diabetes may affect periodontal health by causing gingival inflammation and regular dental checkups are important, less than 64% of the study respondents were aware of specific periodontal complications associated with diabetes mellitus. Surprisingly, 50% of study respondents were unaware of the fact that tooth loss is a common dental complication among patients diagnosed with diabetes. The consequences of periodontal disease and subsequent tooth loss are not only important consideration for the qual-

ity of life of patients with diabetes, but they may affect significantly the overall health by compromising patients' ability to maintain a healthy diet and proper glycemic control. Dentists were significantly more aware of specific periodontal complications, such as gingival bleeding, tooth mobility and alveolar bone loss, than physicians. Although dentists were more aware than physicians about most of the periodontal complications associated with diabetes, their awareness level is considered to be low compared to the impact of diabetes on periodontal health. The FDI world Dental Federation with the International Diabetes Federation urged to improve the knowledge about reciprocal link between diabetes and oral health among health professionals. Increasing the knowledge of health care providers will positively improve their attitude and behavior towards the management

(Contd. on ... P.17)

Table 1. Sociodemographic characteristics.

	Physicians N (%)	Dentists N (%)	P-Value*	All participants N (%)
Age				
≤30	112 (83.3)	150 (54.0)	0.214	262 (51.4)
>30	120 (51.7)	128 (46.0)		248 (48.6)
Gender				
Male	124 (53.4)	169 (60.8)	0.106	293 (57.5)
Female	108 (46.6)	109 (39.2)		217 (42.5)
Years since graduation				
≤5 years	116 (50.0)	134 (48.2)	0.722	250 (49.0)
>5 years	116 (50.0)	144 (51.8)		260 (51.0)

\*Chi-square (P< 0.05)

Table 2. Reported periodontal complications associated with diabetes mellitus.

Periodontal complication	Physicians N (%)	Dentists N (%)	P-Value*	All participants N (%)
Gingival inflammation	181 (70.0)	239 (86.0)	0.020	420 (82.4)
Gingival bleeding	109 (47.0)	215 (77.3)	<0.001	324 (63.5)
Tooth mobility	104 (44.8)	222 (79.9)	<0.001	326 (63.9)
Periodontal abscess	173 (74.6)	133 (47.8)	0.049	306 (60.0)
Alveolar bone resorption	91 (39.2)	235 (84.5)	<0.001	326 (63.9)
Tooth loss	114 (49.1)	158 (56.8)	0.091	272 (53.3)

\*Chi-square (P< 0.05)

Table 3. Reported dental care recommendations for patients diagnosed with diabetes mellitus.

Recommendation	Physicians N (%)	Dentists N (%)	P-Value*	All participants N (%)
Regular dental checkups are important	199 (85.8)	260 (93.5)	0.005	459 (90.0)
Poorly controlled diabetic patients should have more frequent dental checkups	197 (84.9)	264 (95.0)	<0.001	461 (90.4)
Poorly controlled diabetic patients should have more frequent scaling	138 (59.5)	227 (81.7)	<0.001	365 (71.6)

\*Chi-square (P< 0.05)

Table 4. Reported awareness of the association between diabetes mellitus and periodontal health, and knowledge score.

	Physicians N (%)	Dentists N (%)	P-Value*	All participants N (%)
Diabetes affects periodontal health	175 (75.4)	268 (96.4)	<0.001	443 (86.9)
Periodontal health affects metabolic control	102 (44.0)	167 (60.1)	<0.001	269 (52.7)
Bidirectional association between diabetes and periodontal health	98 (42.2)	163 (58.6)	<0.001	261 (51.2)
Knowledge score**				
0	45 (19.4)	90 (32.4)	0.001	135 (26.5)
1	187 (80.6)	188 (67.6)		375 (73.5)

Note: Results represent the number of participants who answered yes for the above mentioned questions.

\*Chi-square (P< 0.05)

\*\*Knowledge score: 1: if correctly identified gingival inflammation, gingival bleeding, tooth mobility, periodontal abscess, alveolar bone resorption and tooth loss to be influenced by diabetes and the participant had reported that he or she was aware that diabetes affects periodontal health, a score of 0 was given if any of these variables was not correctly answered.

*Retrospective study on an outbreak of multi-drug resistant Klebsiella pneumoniae, possessing the new ESBL SHV-112 in a Kuwaiti hospital.*

**Prof. Ali A. Dashti**

*Department of Medical Laboratory Sciences,*

*Faculty of Allied Health Sciences*

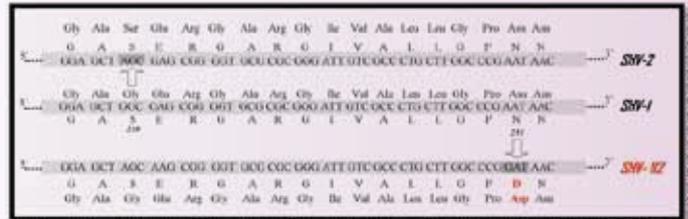
**(Final Report of Project No.NM 01/06)**

The emergence and spread of multi drug-resistant (MDR) bacteria that cause human infections is increasing worldwide. In this regard, the study of multidrug resistance patterns of Enterobacteriaceae are of great importance for the microbiologists, as they are the most prevalent cause of several bacterial infections in humans.

Enterobacter species are responsible for bacteremia, endocarditis, intra-abdominal infections, septic arthritis, osteomyelitis, lower respiratory tract infections, skin and soft-tissue infections, urinary tract infections (UTIs), and ophthalmic infections. Furthermore, they cause various community-acquired infections. The production of beta-lactamases enzymes is considered as the leading cause of resistance to beta-lactam antibiotics among gram-negative bacteria. In recent years there has been an

increased incidence and prevalence of extended-spectrum beta-lactamases (ESBLs), enzymes that hydrolyze and cause resistance to oxyimino-cephalosporins and aztreonam. Several mutations in genes encoding SHV, TEM and CTX-M beta-lactamases have been associated with ESBL activity.

Patients infected with bacteria producing extended-spectrum beta-lactamases (ESBL) are at higher risk of mortality and morbidity. Therefore the availability of specific data on the occurrence and spread of such MDR species is highly essential for the clinical management of patients with Enterobacter infection. However, such clinical information is very scarce in Middle East countries especially in Kuwait.



**Figure 1.**



**Figure 2.**

Hence, this study is highly significant.

This study reports the emergence and spread of an ESBL-producing *Klebsiella pneumoniae* clone in a neonatal intensive care unit (NICU) in a Kuwaiti hospital. Identification of the bacteria was based on traditional bacteriological and biochemical tests using the Vitek system. Antibiotic susceptibility was tested by the disc diffusion method using 16 different antibiotics. ESBLs were detected using disc approximation and double-disc synergy methods and confirmed as ESBLs using Etest. PCR and DNA sequencing were performed to determine the genotypes and mutations in the beta-lactamase genes (*bla*-TEM, *bla*-SHV and *bla*-CTX-M).

The results of this study indicate that a single clone of ESBL-producing *K. pneumoniae* caused bloodstream infections among babies in a NICU of a Kuwaiti hospital and may have emerged at least 5 years ago. This clone was also present on the hands of health care workers, suggesting that they may have been involved in its transmission. Further studies are recommended to determine whether this clone is also spreading in other Kuwaiti hospitals.

**Periodontal Diseases and Diabetes Mellitus ... (From.... P.16)**

**Table 5. Logistic regression analysis of factors associated with knowledge level of effects of diabetes on periodontal health.**

Factor	B (SE)	OR (CI)	P-value
Age	0.054(0.017)	1.055 (1.020-1.092)	0.002
Gender	0.492(0.219)	1.635 (1.064-2.511)	0.0025
Years since graduation	-0.153(0.333)	0.858 (0.447-1.647)	0.645
Profession type	0.813(0.218)	2.254 (1.469-3.458)	<0.001

OR, adjusted odds ratio; CI, 95% confidence interval.

of diabetic patients. Our results support the importance of inter-professional collaboration between medical and dental professionals. Therefore, enhancing and the communication between medical and dental health care providers is very essential to facilitate exchange of knowledge between the two professions, in order to provide an effective management of serious chronic disease such as diabetes mellitus. Professional attention should be given to the importance of the relationship between oral health and systematic health. It is very essential for both dental

and medical primary health care providers to understand the relationship between diabetes mellitus and periodontal diseases in order to give the appropriate assessment, prevention and management of diabetic patient health needs. The knowledge about the association between periodontal diseases and diabetes can be increased through conducting educational programs and establishing an integrated practice structure for managing all aspects of diabetes in order to enhance teamwork and exchange of knowledge between dental and medical practitioners.

Publications program driven towards elevating  
KU Research Sector's presence worldwide

## OVPR's publications integral to a planned strategy of keeping the scientific community duly informed and updated on institutional scientific developments

Despite pre-defined line-up of publications, the Research Sector (RS) moved into the academic year 2011/12 with scheduling of key scientific events and activities that required assembling critical information for an entirely new package of publications as RS commitments to faculties and researchers. The inclusion of new publications necessitated stretching the production activity to accommodate emerging requirements of scientific poster events, humanities workshop and priority research, alongside the timed release of October 2011 edition of the OVPR Research newsletter, and RS Annual Report 2011/12. The new package included preparation of OVPR/RS website flyer, file folder, workshop/scientific events posters, participants certificates, complementary cards, and 88 scientific posters, all printed for the sciences and humanities, including the designing of humanities posters in-house, in an unprecedented start-to-finish schedule, readied for March 5 and 12, 2012 events, respectively. Alongside, progressed the preparatory phase for the next quarterly edition of the OVPR newsletter for March/April 2012, requiring an intense multi-task approach for parallel and simultaneous progression of several publications shaping-up for production, in keeping with the upcoming humanities workshop, scientific poster events, as well as the periodicity of RS established and serial documents.

For the publications sphere, this was an unusual phase of tight production time-lines for RS scheduled activities, and initiation of preparatory phase for 20<sup>th</sup> edition of Sponsored



### ▲ Some of RS recently released publications, 2012

*An entirely new package of publications generated  
with the scheduling of key scientific events and activities  
as RS commitments to faculties and researchers*

Research series, the first issue of which was released in 1987, and the 19<sup>th</sup> edition in 2011. Presently, empirical information on all ongoing and completed projects by faculties is being assembled for the 20<sup>th</sup> edition of Sponsored Research, in an annual cycle of growth and diversification in faculty research, including joint research with external institutions.

Apart from profiling KU's scientific activity, the publications constitute RS distinct strategy for reaching out to the scientific community and the wider society in *presenting, preserving* and *disseminating* most reliable, authentic and accurate information on KU research policy, procedures and grant system, to keep researchers duly informed and updated on latest measures, developments, and accomplishments, as well as spreading awareness and simulating collaboration with external institutions for joint research. Essentially, this purpose keeps the publications domain in full operational steam, with the rapid release of latest RS publications, specifics of which are summarized below, in addition to newly issued APC scientific journals, be-

ing an integral part of OVPR's responsibilities:

#### 1. Research Sector (RS) publications (September 2011 to March 2012)

##### • OVPR Research Quarterly Newsletter,

October 2011 Issue  
-- Released in



October 2011, OVPR's Research Quarterly Newsletter highlights major events and happenings during the period July through September 2011. In focus were KURP's Concept Development Workshop, RA-AstraZeneca signing ceremony for joint coronary research, launching of Postdoctoral Fellowship and Research Chair programs, instituting Distinguished Research Series, and featuring outstanding research accomplishments of faculty members for public awareness. The Series first consignment focused on summary of first four articles, based on distinguished outputs from Funded, and Unfunded research and excellence in Project Final report. Series 2 would feature the next four research summaries in the March/April 2012 edition

## RS Publications Program driven towards ... (From... P.18)

of the newsletter, thereafter settling to its regular run, with four articles in each edition, on first-come-first served principle. Also, featured were new recipients of US registered patents, incentive rewardees, Distinguished and Best Young Researchers award winners, as well as Graduate Students Project Prize recipients, while the new Project Processing Plan for small-budgeted projects was outlined, and standard features on statistical update, new publications generated, and latest issues of APC's journals released, received significant coverage. For readers information, OVPR's Research Quarterly Newsletter is widely distributed, and displayed on OVPR website (<http://www.ovpr.kuniv.edu>), with downloading option. Published (*in English and Arabic*).

### • RS Annual Report, 2010/11 -- The Research Sector's Annual Report



**2010/11** presents an analytical insight into major accomplishments in faculty research, and the mission ahead, outlining new initiatives, developmental activities, and ongoing programs, summarizing an year-round cycle of growth in faculty research during the period, September 1, 2010 through August 31, 2011. All through the year, RS consistently preserved the sustainable momentum of faculty research, overseeing progression in key programs, and strategies and goals for the future. The year's highlights were the launching of two new programs – Postdoctoral Fellowship and the Research Chair, while declaration of first batch of US registered patent recipients marked a significant breakthrough in faculty research, reflecting on the quality of research at KU. The infrastructural development process enlisted expansion with the entry of Dentistry faculty in seeking General Facility grants for developing state-of-the-art labs for dental research,

while new agreements with external institutions opened pathways for the partnership process to grow for collaborative and joint research. The developmental activities dominated the research support system, with valid reformations and updates, and matters of research quality, procedural flexibility and transparency acquired new dimensions. Thrust was also on scientific openness and enhanced communication with faculties to promote research participation, and creating a receptive environment for high quality endeavors, aimed at elevating the quality and standard of KU research. Presenting a holistic view of RS accomplishments and goals ahead, the report outlined RS efforts towards steering institutional research towards global dimensions on its scientific strengths and research excellence. Packed with critical substance, statistics, and empirical information, the report has been widely circulated, and electronic access provided through OVPR's website. Published (*in English and Arabic*).

### • Priority Research Areas

-- Prepared as a handy reference, Priority Research Areas outlines ten areas designated as institutional research priorities, currently being implemented at Kuwait University. Faculties are encouraged to submit proposals in priority areas, with priority projects carrying additional benefits for the project and the researcher, specifics of which are presented in the handy guide on priority research, released in January 2012. For readers information, research priorities were determined on the basis of a faculty-wide survey conducted by the Research Sector during 2009/10, and based on analysis of the faculties response-pattern, ten areas of priority research were identified, approved and enlisted for implementation, from April 1, 2010 onwards. Priority Research Areas reference guide has been released, and posted on RS website for access. Published (*in English and Arabic*).



### • OVPR/RS Website Flyer 2012

— With the Sector's website assuming new identity and nomenclature as Research Sector (RS), the twin OVPR and RS websites were redesigned with updated information and new outlook, as dynamic hubs of latest information on scientific developments at Kuwait University, necessitating generation of a new 2012 flyer, appropriately reflecting institutional scientific programs, policy and accomplishments for global outreach. The websites consistently remained under gross updating throughout the year, with inclusion of newly launched programs, holding scientific events, workshops and seminars, reporting major happenings, and introducing e-application for grant support to facilitate researchers. Also, included was the e-manual on research support rules and regulations, and a direct access-link provided to collaborative research websites, apart from presenting exhaustive listing of research rewards incentive recipients for funded, unfunded and meritorious project final reports, and information on new partnerships and agreements reached, significantly enhancing KU's presence and profile in the new updated 2012 OVPR/RS websites. The statistics on OVPR websites are periodically refreshed, exhibiting latest information on faculty research, while new publications released by RS unfold the vast and extensive sphere of research programs, priorities, and accomplishments at KU. Being finalized for early release, the flyer redefines the visual outlook of the websites, profiling wider, more extensive and enriched substance and content on the dynamics of institutional research at KU for global access. Advanced production for release (*in English and Arabic*).



### • KU-Endowment Agreement, 2012

– Adapted the textual matter concerning the proposed KU-Endowment agreement in the form of a handout, (*Contd. P.21...▶*)

*Incomplete reports run the risk of being returned to PIs for completion*

## RS outlines explicit guidelines for Project Final Report submission by PIs to facilitate objective evaluation of research, and expediting refereeing

The Research Sector took yet another reformatory step in explicitly outlining updated guidelines for Principal Investigators (PIs) in preparing their project's Final Report for submission, on successful completion of a research. The updated guidelines, displayed on RS website during December 2011, were primarily aimed at streamlining the format of final reports to be followed by all PIs, for facilitating objective evaluation of research, and in expediting the refereeing process, a unified procedure applied to all final reports that the PIs submit. The need for updating final report guidelines was in view of the observed differential pattern of reports submitted by researchers, invariably omitting key elements, considered critical for refereeing and evaluation purposes.

This lack of uniformity in reports, provided the basis for RS to review the existing guidelines, and identify major points that all PIs must adhere to in preparing their research final report for submission purposes, at the completion of the project. Being mandatory requirements, the newly evolved guidelines marked RS step in line with its current policy of unifying procedures, and facilitating researchers. For researchers information, the new format for preparing a project's final report is organized around *three major components*, with associated key elements specified, to facilitate researchers in organizing their project report accordingly. The structural frame of the final report is outlined alongside for researchers' compliance, and elemental omission(s), if any, may render a project report incomplete, which may consequently run the risk of being returned to PIs for completion purposes. With

### Key elements for inclusion in preparing Final Report specified

essential requirements outlined, RS anticipates faculty researchers to follow the unified format in structuring their project final report to quicken the pace of evaluation/refereeing:

#### Major Requirements for preparing a Project Final Report

##### A. FRONT Page

- a. Title of Project
- b. Grant No. (the assigned Project Code)
- c. Name(s) of Research Team
- d. Total Budget of Project, as well as Supplementary Budget taken (if any).
- e. Project's Starting and Ending Dates, including Extension(s) taken (if any)
- f. Project's Research Productivity in terms of:
  - *Paper(s) submitted*
  - *Paper(s) Accepted*
  - *Paper(s) Published*

##### B. INSIDE Pages

- A general introduction including the project's concept, objective(s) and budget categories.
- A summarized view of previous year(s) research achievements.
- Results obtained, and the extent of adherence to the proposed research methodology. In case of major modifications in any of the main items of the original proposal, valid justifications and reasons should be given.

- Report should include accomplishment of all objectives of research, specifying the scientific importance of research findings, including the published and/or accepted articles, and the name(s) of journals in which the research is published. Also, articles submitted or under-preparation, as well as results presented and discussed in international symposia and meetings should be included in the report. Overall, this information is vital in appropriately reflecting on the completed project's scientific output.

- The final report may highlight the significance and application of results obtained to Kuwait and the Gulf Countries. In addition, the report should specify as to how critical is the need for carrying forward the research in the project's specific field of study.

##### C. LAST Page

1. It is mandatory to ACKNOWLEDGE Kuwait University Research Sector's Support in granting the project, and facilitating research implementation.
2. KU Research Sector Grant No. should also be duly acknowledged in all Research Papers/Publications generated from the project.

(Please Note: An incomplete Report will be RETURNED for completion)

**OVPR Publications Released ... (From.... P.19)**

providing the basis for the meeting held at RS during January 2012, for the visiting delegation from the Awqaf Secretariat. The document outlined the vision, purpose, goals and responsibilities of the prospective partners in supporting scientific research, the implementation mechanism and futuristic outlook of the Waqf fund as the mainstay of the proposed project. The document was prepared in Arabic, and distributed to concerned participants, establishing grounds for further review, discussions, reformations, and feedback for finalizing the agreement. Prepared (*in Arabic*).



in time for the two events. The requirements included the events invitations, posters and participants/winners certificates prepared for relevant activities. Far more staggering, however, was the generation of as many as 88 scientific posters presenting the research accomplishments of participating researchers in the two events. These included 51 posters collectively for participants from the Engineering & Petroleum, Science and Women colleges, and 37 posters, practically all designed in-house at RS, for the Humanities faculties (Arts, Business Administration, Education, Sharia, and Social Sciences). All 88 posters were prepared, approved by respective researchers and printed for meeting the Poster-Day timelines, with marathon task accomplished. Printed (*in English and Arabic*).



- Journal of Law, Vol. 35, No. 3, September 2011.
- Journal of Law, Vol. 35, No. 4, December 2011.
- Journal of Sharia & Islamic Studies, Vol. 26 Issue 87, December 2011.
- Arab Journal for the Humanities, Vol. 30, No. 117, Winter 2012.
- Annals of Arts and Social Sciences, Vol. 32, September 2011.
- Annals of Arts and Social Sciences, Vol. 32, December 2011.

The above documents provide an overview of the intensity of OVPR's publications program, centered as it is on aggregation, adaptation and authoring of vital information within the scope and requirements of the Research Sector's programs and priorities, requiring transmission of critical information to faculties, external sectors and global readership. RS reliance on major documents fulfill institutional obligations to diversified community, presenting insight into the prevailing scientific dynamism at Kuwait University, as well as catering to emerging needs, while sustaining the requirements of ongoing and serial documents that consistently require consolidation of gross information that needs to be transmitted to an expanding community of researchers, scientists, decision-makers, planners, institutions, partners, and global users/browsers, as RS enduring strategy to bring KU's research accomplishments to the forefront of world attention. This purpose remains the mainstay of OVPR's publications program, critically driven towards securing heightened pres-



- **Humanities Workshop Package** – Essentially including multi-requirements of

the humanities workshop, the package included workshop file-folder, flyers, posters, certificates, and participants badges for the two-day workshop held on March 13 & 14, 2012, respectively. The entire package was designed, and printing organized through interactive communication with the press, for timely delivery, distribution and display of the workshop consignment for the humanities events held on March 13 & 14, 2012. Prepared (*in Arabic*).

**II. Academic Publication Council (APC) Publications (September 2011 January 2012)**

The Academic Publications Council has been equally prolific in the production and generation of several scientific journals, the latest editions of which are as follows:

**Journals released by APC during the period September 2011 through January 2012:**

- Journal of the Gulf & Arabian Peninsula Studies, Vol. 37, No. 142, October 2011.



▲ *Some of the APC Journals released*

( *Contd. P.25...* ▶ )

**Quality assurance in faculty research steadily acquiring new dimensions**

**RS announces 19 new research reward recipients for achieving scientific distinction based on *Funded & Unfunded* research, and for excellence in *Project Final Report***

With the latest batch of 19 new research reward recipients announced by RS, during the last four months (October 2011 until January 2012), quality assurance in faculty research is steadily improving, with several more researchers having their published papers included in distinguished journals of international repute and impact. The declaration of new recipients symbolizes faculties increased predilection to opt for ranked international journals that figure high on the JCR ranking index, a reassuring development that RS is vigorously promoting across faculties. Together, with the newly announced recipients joining the distinguished ranks, RS has so far rewarded 92 research reward beneficiaries, since the launch of the stimulus package 21 months ago, in April 2010, inclusive of the latest reward winning researchers up to January 2012. For readers

So far 92 faculty researchers have won rewards since the launch of incentives on April 1, 2010 until January 2012

information, while a comprehensive listing of all beneficiaries has been displayed on RS website (<http://www.ovpr.kuniv.edu/research>), the names of new recipients are presented here under appropriate categories of funded and unfunded research, and Project Final Report, duly classified by faculty and year of published research/final report.

In numerical terms, the distribution of 92 reward recipients is spread across

several faculties, with 30 (32.6%) reward winners listed under the category of Funded Research, 42(45.7%) under Unfunded Research, and 20 (21.7%) under the Project Final Report category. These figures provide statistical insights into the growing number of faculty researchers, whose scientific efforts have significantly attributed to elevating the quality and standard of research at Kuwait University, with their research published in journals of distinguished international standing. In amplifying this trend, RS current reformatory strategy precisely aims at boosting faculties participation in high quality research that meets national aspirations as an institutional obligation and social responsibility.

Presently, RS is driven towards further strengthening the quality norm

**New Recipients of Research Rewards Incentives  
(October 2011 until January 2012)**

**A. Winners of Incentive Rewards for *Funded* Research**

**Faculty of Engineering & Petroleum**

**Year 2011**

I. Yigit, AH; Christoforou, AP; Majeed, MA: "A nonlinear visco-elastoplastic impact model and the coefficient of restitution." *Journal of Nonlinear Dynamics*, 2011, 66(4); pp. 509-521. (*Nonlinear Dynamics Journal* is listed 14th out of 122 in the *Mechanical Engineering* category).

**Faculty of Science**

**Year 2012**

I. Al-Sagheer, F; Ahmed, Z: "PVC-silica hybrids: Effect of sol-gel conditions on the morphology of silica particles and thermal mechanical properties of the hybrids." *Journal of Sol-Gel Sci. Technol.*, 2012, 61; pp. 229-235. (*Journal of Sol-Gel Sci. Technol.* is listed 3rd out of 25 in the *Ceramics Materials Science* category)

**Year 2011**

I. Al-Mousawi, SM; Abdelhamid, IA; Moustafa, MS; Elnagdi, MH: "Functionally substituted nitriles as versatile reagents in organic synthesis: Recent developments in our laboratories." *Journal of Current Organic Synthesis*, 2011, 8(6), pp. 892-900. (*Current Organic Synthesis Journal* is listed 9th out of 56 in the *Organic Chemistry* category).

( **Contd. P.23...** )

## Research Rewards Recipients...(From.... P.22)

in faculty research, for KU to acquire international dimensions on grounds of its research quality. Several researcher-friendly measures have, therefore, been taken by RS, including personalized faculty visits/revisits to create a receptive environment for high quality, high value research at KU. Apart from refined procedures, RS has significantly enhanced and improved its services to facilitate research-

ers, so as to reinforce their confidence in institutional grant awards, as a dependable support system, for pursuing well defined projects that are strategic to national developmental needs. RS supportive provisions of e-application, raised mission allowance, and incentives are aimed at further stimulating faculties to venture into areas of priority research that are potentially significant to the State and society, and vital

for raising the spectrum of KU research to international levels of credibility. It is with these aspirations, that RS looks forward to sustained improvement in quality of research at KU, while listing below the 19 new research reward recipients, 8 of whom have won scientific distinction for their funded research, additional 8 for unfunded research, and 3 for excellent rating in their Project Final Report:

2. Al-Azemi, T; Mohamed, AA: "Flourinated  $\epsilon$ -caprolactone: Synthesis and ring-opening polymerization of new  $\alpha$ -fluoro- $\epsilon$ -caprolactone monomer." *Polymer Journal*, 2011, 52, pp. 5431-5438. (*Polymer Journal* is listed 9th out of 79 in the Polymer Science category).
3. Al-Kharafi, F; Ghayad, IM; Abdullah, RM: "Effect of chlorine gas bubbling on the Dezincification of brass in acidified sodium sulfate solution." *Journal of Corrosion Science Section*, 2011, 67(11), June 30. (*Journal of Corrosion Science Section* is listed 15th out of 76 in the Metallurgy & Metallurgical Engineering category).
4. Zaher, AA; AbuRezq, A: "On the design of chaos-based secure communication systems." *Journal of Communications in Nonlinear Science and Numerical Simulation*, 2011, 16, pp. 3721-3737. (*Communications in Nonlinear Science and Numerical Simulation Journal* is listed 3rd out of 54 in Mathematical Physics).

### Faculty for Women

#### Year 2011

1. Al-Dallal, J: "Measuring the discriminative power of object-oriented class cohesion metrics." *IEEE Transactions on Software Engineering*, 2011, 37(6). (*IEEE Transactions on Software Engineering Journal* is listed 9th out of 99 in the Software Engineering, Computer Science category).
2. Yassin, MF: "Impact of height and shape of building roof on air quality in urban street canyons." *Journal of Atmospheric Environment*, 2011, 45, pp. 5220-5229. (*Journal of Atmospheric Environment* is listed 24th out of 193 in the Environmental Sciences category).

## B. Winners of Incentive Rewards for *Unfunded* Research

### Faculty of Engineering & Petroleum

#### Year 2012

1. Albahri, TA: "Developing correlations for the properties of petroleum fuels and their fractions." *Journal of Fluid Phase Equilibria*, 2012, 315, pp. 113-125. (*Fluid Phase Equilibria Journal* is listed 5th out of 51 in the Thermodynamics category).
2. Mohammad, MG; Ahmad, I; Salman, A; Hamdan, S: "Broadcast scheduling in packet radio networks using Harmony Search algorithm" *Journal of Expert Systems with Applications*, 2012, 39, pp. 1526-1535. (*Expert Systems with Applications Journal* is listed 50th out of 247 in Electrical & Electronic Engineering category).

(Contd. P.30...▶)

## RS receives a three-member Saudi delegation from Imam Mohammad Bin Saud University, Riyadh

*Visit transpires possibility of scientific collaboration*

A three-member Saudi delegation visited the Office of the Vice President for Research, on March 15, 2012, following the successful culmination of the two-day workshop on “Writing and publishing research, and ethics of scientific research,” organized by the Research Sector for the benefit of humanities faculties. The delegates were received by Prof. Hasan Al-Sanad, Vice President for Research, and his assistants, Prof. Haitham Lababidi, Prof. Nejib Smaoui, and Dr. Obaid Al-Otaibi, with the visit providing opportunity for felicitating the speakers of the workshop, from the University of Imam Mohammad Bin Saud, Riyadh, Saudi Arabia. The delegates included Prof. Abdulatif Bin Homoud Al-Nafii, Dept. of Geography, Dr. Saleh Bin Hammad Al-Assaf, Faculty of Education, and Dr. Mohammad Al-Hamoumi, Dept. of Psychology, Faculty of Science. The workshop, primarily meant for faculty members and graduate stu-



▲ Saudi Delegates being honored

dents of humanities colleges, focused on key concerns as regards preparing a scientifically sound proposal, publishing research outputs in international scientific journals, and addressing ethical concerns, privacy, rights and safeguards.

The workshop provided an ideal forum for the speakers to provide an insight into preparing and publishing research through a series of lectures, ranging from, “The stage of preparing scientific research,” presented by Prof. Al-Assaf; to “Preparing and publishing scientific articles in the international scientific journals,” by Dr. Al-Hamoumi; and “Scientific integrity in internet era,”

which Prof. Al-Nafii outlined.

The visit led to fruitful scientific exchange between the two sides, where the delegates expressed their appreciation for RS support and encouragement for scientific research at all levels, as well as for its initiative in organizing the scientific writing workshop for humanities, the sector which they believed equally competitive in the sphere of research as scientific faculties. The visiting delegates were honored with mementos and certificates, with the expressed hope that the meeting would transpire research collaboration between the two universities in developing and advancing research.



### RS workshop on “Writing and publishing research...(From.... P.8)

scientifically sound proposal, publishing research outputs in international scientific journals, and addressing ethical concerns, privacy, rights and safeguards, providing an ideal forum for the speakers to provide an insight into preparing and publishing research through a series of lectures. The two-day workshop was held for the faculties of Arts, Education, Sharia on Tuesday, March 13, 2012, at Dr. Bassama Al-Musalam’s Hall, Education faculty, Keifan campus, and for the faculties of Law, Administrative Sciences, and Social Sciences on Wednesday, March 14, 2012, at the Kuwait National Bank Hall at Social Sciences faculty, Shuwaikh campus. The collective participation in the two-day workshop reached 115 faculty members and

graduate students.

Apart from the lectures, the workshop also provided the occasion for exploring ways of research collaboration between the two universities, with the Saudi delegation touring the humanities faculties, and meeting respective faculty deans, in addition to visiting the Academic Publication Council and the Center for Gulf & Arabian Peninsula Studies. The delegates also visited the Office of the Vice President for Research on March 15, 2012, with the visit providing opportunity for felicitating the elite speakers, who were honored with mementos



▲ The Vice President with Saudi Delegation

and certificates, while certificates were distributed to all workshop participants. The workshop culminated on an optimistic note of enhancing research through scientific collaboration between the two universities, and benefiting from each others expertise in developing and advancing research.



*KU-KNPC carry forward the partnership process with the third round of meeting held at KNPC*

**Research Sector outlines the proposed models for joint research in the key areas of Modeling, Simulation & Control, Catalysis/NOx reduction**

Having laid the basis for KU-KNPC scientific collaboration during the course of two meetings held with KNPC on December 6, 2010 and May 23, 2011, the partnership process was carried forward with the Research Sector outlining the proposed models for research in key areas during the third round of meeting held at KNPC premises on November 2, 2011. The meeting, presided by Mr. Ahmed Al-Jemaz, Deputy Managing Director, Shuaiba Refinery, was attended by a team of Professors from Kuwait University, that included Prof. Haitham Lababidi, Asst. Vice President for Research, Prof. Abdulwahab Al-Musallam, Chemical Engineering Dept., Faculty of Engineering & Petroleum, and Prof. Ali Bumajadad, Chemistry Dept., Faculty of Science, where research topics, outlining the framework for joint research were presented on Modeling, Simulation & Control, and Catalysis/NOx reduction.

Dr. Suad Al-Radwan, Technical Coordinator, Research & Technology Dept., KNPC, welcomed the delegates and explained the significance of KU-KNPC cooperation in pursuing joint research in areas of potential significance for the oil industry, which could effectively be applied in refining industry, based on KU's exper-

tise, experience and capabilities.

The highlights of the meeting were the three presentations made by the KU team, outlining the scientific and experimental aspects of research in the areas of Modeling, Simulation and Control, developing a predictive model concerning Online Monitoring and Control of Hydrocracking product Quality, and addressing Environmentally friendly natural gas combustion catalysts, with the purpose of providing a catalyst for controlling toxic emission of NOx gases. The presentations were followed by deliberations and consensus on moving ahead with explicit proposals that could be jointly pursued by teams from KU-KNPC. It was also agreed to constitute a taskforce for identifying additional



▲ **KU Presentation in Progress**

areas of collaboration in the fields of modeling, simulation, control and environmental-related areas, especially subjects that could be applied to KNPC facilities, given KU's efforts and expertise in the field.

Presently, an Open Day for KNPC to tour KU General Facilities and Labs, is on the anvil, for demonstrated outlook of KU's resource sophistication and technology strengths for advanced and experimental research. Efforts are also ongoing with both sides closely working on outlining the Memorandum of Understanding (MOU), for collaborative agreement to be formalized between KU-KNPC, and grounds set for joint research in the strategic areas, that both sides consider vital for the oil industry and environment in Kuwait. □



▲ **A view of participants in KU-KNPC meeting**

**OVPR Publications Released...(From.... P.21)**

ence and global outreach of KU Research Sector's activities, ensuring continuous relay of strategic scientific information to keep the international readership informed and

updated on institutional research developments. For readers information, RS publications are widely distributed, hardcopies are available on request, web-users may access pub-

lications electronically on OVPR/RS websites, with browsing and downloading options (<http://www.ovpr.kuniv.edu>) & (<http://www.ovpr.kuniv.edu/research>). □

Collaborative research with external institutions steadily progressing

Faculty research activity maintains its scientific rhythm with 479 ongoing, completed & under-process projects in the first 5-months of the academic year 2011/12

Research Sector implements New Processing Plan for fast track clearance of Small-Budgeted projects

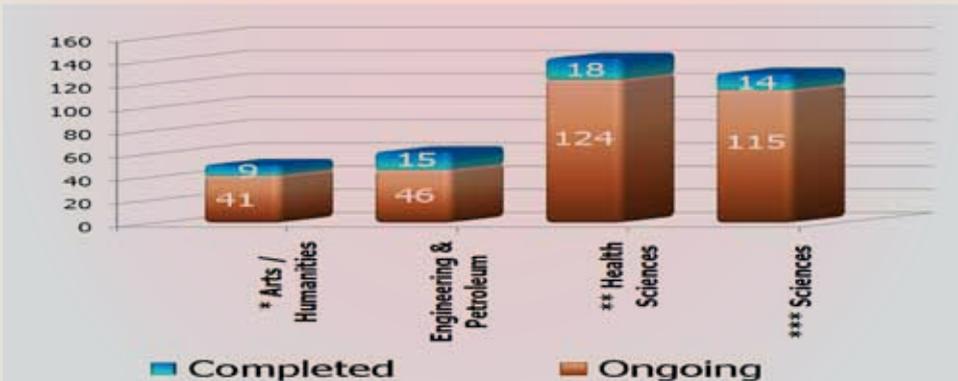
The faculty research activity maintained its scientific rhythm with the onset of the academic year 2011/12, exhibiting vitality in the spheres of ongoing, completed and under-process projects, with a total of 479 projects providing collective outlook of faculty research during the first five months of the academic cycle, Sept. 2011 through January 2012. Despite varying funding levels, all faculties were the grant recipients for their scientific endeavors, whether in basic or applied sciences, or in arts and humanities, sustained through the Research Sector's (RS) fiscal, resource and services support. The faculty-wise volume of research, however, differed in terms of individual faculties participation-rates in RS grants activity, with some faculties chartering growth, some retaining their existing levels, and some declining. It is within the framework of this pattern, that a numeric outlook of faculties cumulative participation and performance in KU research reached a total of 479 projects, of which 326 (68.1%) were ongoing, 56 (11.7%) completed, and 97 (20.2%) under-process (Table 1).

The faculties predilection to pursue comprehensive projects with larger budgetary levels was once again observed in the concentration of a majority of ongoing projects 161(33.6%) in the highest budgetary range of more than KD 8500/-, while 96(20%) projects were enlisted in less than KD 2501/- category. Collectively, the highest and lowest budgetary levels accounted for a total of

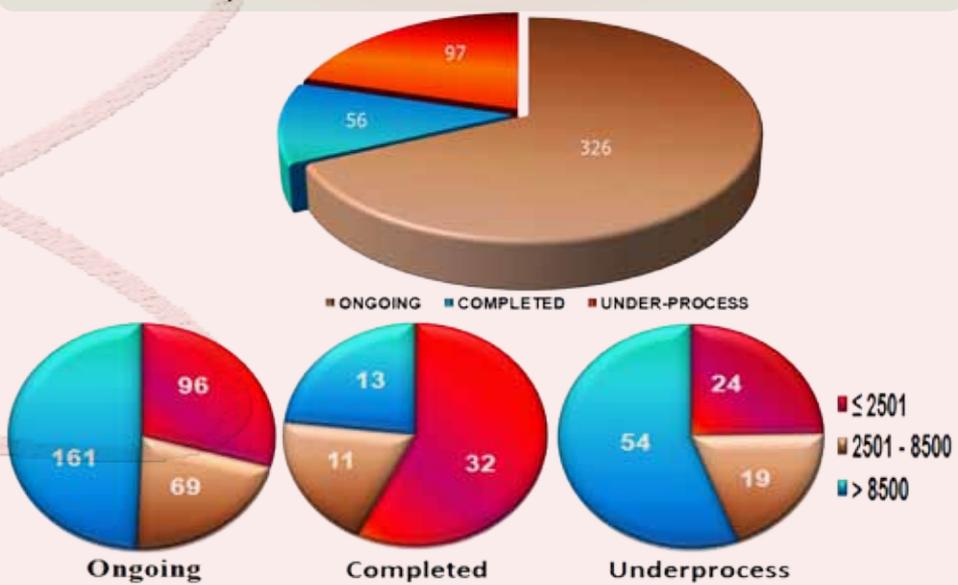
**Table 1. TOTAL RESEARCH ACTIVITY**  
Academic Year 2011/12 (Sept. 1, 2011 to Jan. 31, 2011)\*

Project Status	Funding ** Levels			Total
	less than 2501	2501 - 8500	more than 8500	
Ongoing	96	69	161	326 (68.1%)
Completed	32	11	13	56 (11.7%)
Under-process	24	19	54	97 (20.2%)
<b>TOTAL</b>	<b>152</b> (31.7%)	<b>99</b> (20.7%)	<b>228</b> (47.6%)	<b>479</b>

\* Source KURA, Data upto January 31, 2012.  
\*\* Values in KD.



\* Includes the Faculties of Arts, Business Admn., Education, Law, Sharia and Social Sciences.  
\*\* Health Sciences Center Includes Faculties of Allied Health Sciences, Dentistry, Medicine and Pharmacy.  
\*\*\* Includes Faculties of Science and Women.



257(53.7%) ongoing projects up to Jan. 2012, with relatively lesser volume of 69 (14.4%) grants in the medium budgetary range of KD 2501 – 8500/- These figures tend to indicate faculties dominant preferences oscillating between larger

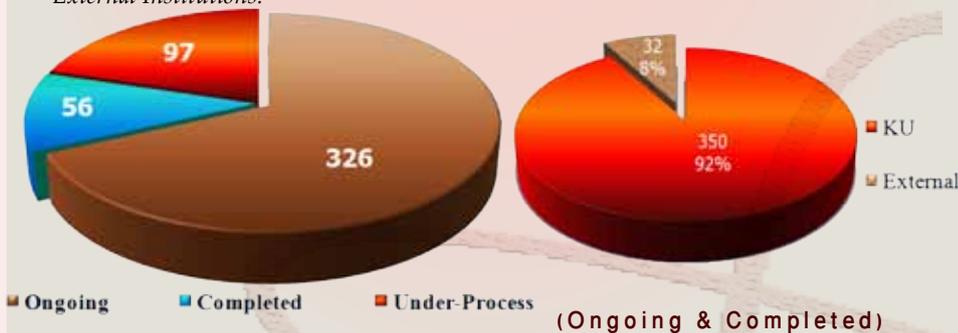
(Contd. P.27... ▶)

**Table 2. TOTAL ONGOING, COMPLETED & UNDER-PROCESS PROJECTS by FACULTY & FUNDING SOURCE**  
Academic Year 2011/12 (Sept. 1, 2011 to Jan. 31, 2012)\*

FACULTY	ONGOING		COMPLETED		UNDER-PROCESS		TOTAL		GRAND TOTAL
	KU	EXT**	KU	EXT	KU	EXT	KU	EXT	
Allied Health Sciences	5	1	1	-	9	-	15	1	16
Arts	10	2	1	-	1	-	12	2	14
Business Admn.	7	-	1	-	2	-	10	-	10
Dentistry	21	1	3	1	3	-	27	2	29
Education	3	2	2	-	3	-	8	2	10
Engineering & Petroleum	41	5	15	-	20	3	76	8	84
Law	-	-	-	-	1	-	1	-	1
Medicine	80	7	11	-	13	6	104	13	117
Pharmacy	9	-	2	-	2	-	13	-	13
Science	93	10	9	1	23	4	125	15	140
Sharia	4	-	1	-	1	-	6	-	6
Social Sciences	12	1	4	-	5	-	21	1	22
Women	11	1	4	-	1	-	16	1	17
<b>TOTAL</b>	<b>296</b>	<b>30</b>	<b>54</b>	<b>2</b>	<b>84</b>	<b>13</b>	<b>434</b>	<b>45</b>	<b>479</b>

326      56      97      479

\* Source KURA, Data upto January 31, 2012.  
\*\* External Institutions.



under-process projects further reflected the faculties continuous involvement in research activity, as observed in the inflow of newly submitted proposals for grant support. Statistically, maximum under-review projects were submitted by Health Sciences faculties 33 (34%), followed by Sciences with 28 (28.9%) projects, Engineering & Petroleum 23(23.7%) projects, and Arts & Humanities 13 (13.4%) projects. Taking ongoing projects (326) alone, the biggest grant recipients were the Health Sciences faculties with 124 (38%) projects, followed by Science colleges (Science & Women) with 115 (35.3%) grant awards, Engineering & Petroleum claiming 46

(14.1%) grants, and Arts & Humanities 41 (12.6%) grants (Table 2).

By funding-levels, the distribution of 326 ongoing projects showed a higher concentration of 161 (49.4%) projects in the more than KD 8500/- category, 96 (29.4%) projects in the lowest budgetary level of KD 2501/-, and 69 (21.2%) projects in the medium-budgetary range of KD 2501-8500/- (Table 3). The accomplished research, however, showed a reverse pattern with 32(57.1%) completed projects in the lowest budgetary category of KD 2,500/-, 13 (23.2%) projects in the highest budgetary category of KD 8,500/- & above, and 11(19.7%)

(Contd. P.28... ▶▶)

▶ and smaller budgeted projects, with medium level projects remaining a lower option. Whether this pattern in faculty research continues or fluctuates would only be detectable through continuous monitoring of faculties grants activity over the years ahead. However, the current status of grants in terms of ongoing, completed and under-process projects, does reveal a majority of ongoing (161, 33.6%) and under-process projects (54, 11.3%) figuring under the highest budgetary category of more than KD 8500/-, while maximum number of completed projects (32, 6.7%) were in the lowest budgetary level of less than KD 2501/-. This is logically explainable in terms of projects having start-to-finish life span of one year, including the RIG grants. Taking together the ongoing, completed and under-process projects, a majority of 228( 47.6%) projects figured in the highest budgetary range of KD 8500/- & above, 152(31.7%) projects were in the lowest budgetary level of KD 2500/-, while cumulative status of 99 (20.7%) projects were found in the medium fiscal range of KD. 2501-8500/-.

Since faculties research performance is measurable in terms of ongoing and completed projects, a total of 382 projects profiled faculties research performance during the period Sept. 2011 to Jan. 2012. Analytically, the Health Sciences Center faculties (Medicine, Dentistry, Pharmacy and Allied Health Sciences) cumulative performance superseded other faculties with 142 (37.2%) ongoing & completed projects, followed by Sciences faculties (Science + Women) with 129(33.8%) ongoing & completed projects, Engineering & Petroleum faculty's performance totaled 61 (16%) ongoing & completed projects, and Arts & Humanities faculties (Arts, Business Administration, Education, Sharia & Social Sciences, there being no law faculty projects) combined performance accounted for 50 (13%) ongoing & completed projects (Table 2). In addition, 97

► **Statistics on Faculty Research ...**(From P.27)

projects in the medium budgetary range of KD 2,501 – 8,500/-. In terms of faculty-wise distribution of completed projects, Health Sciences faculties scored a higher project completion rate (18, 32.1%), than Engineering & Petroleum faculty with 15 (26.8%) completed projects, Sciences faculties recording 14(25%) completed projects, and Arts & Humanities faculties had 9(16.1%) completed projects (Table 3).

Essentially, the foundation of faculty research activity is the Research Sec-

tor's grant support system, the fiscal and resource support that is vital for the sustenance of faculty research activity at Kuwait University. While KU remains the virtual fund provider and facilitator in advancing institutional research, some projects are being supported in partnership with external institutions. Yet, KU's funding support continues to remain the backbone of faculty research, responsible for the sustenance of an overwhelming 348 (91.6%) ongoing and com-

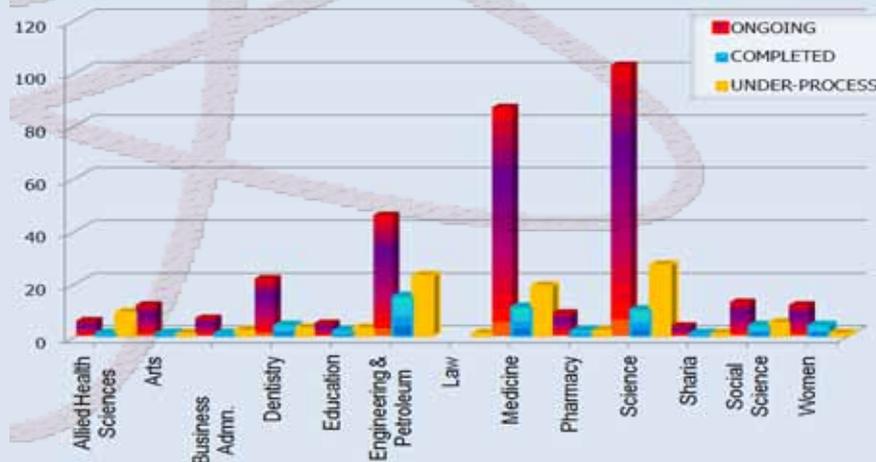
pleted projects up to Jan. 2012, while external institutions collectively rendered support to 32 (8.4%) projects. A key development, however, was the participation of 9 external institutions in funding KU faculty research, enhancing the sphere of scientific collaboration at KU during the last five months (Sept. 2011 - Jan. 2012), and signaling steady progression in joint research activity, with expectations of further growth as currently ongoing discussions with several external institutions mature into empirical understandings and formalized agreements.

**Table 3. PROJECT STATUS by FACULTY & FUNDING\*\* LEVELS**  
Academic Year 2011/12 (Sept. 1, 2011 to Jan. 31, 2012)\*

FACULTY	ONGOING			COMPLETED			UNDER-PROCESS			TOTAL
	less than 2501	2501 - 8500	more than 8500	less than 2501	2501 - 8500	more than 8500	less than 2501	2501 - 8500	more than 8500	
Allied Health Sciences	2	-	4	-	-	1	5	2	2	16
Arts	7	4	1	1	-	-	1	-	-	14
Business Admn.	7	-	-	1	-	-	2	-	-	10
Dentistry	16	-	6	3	-	1	1	1	1	29
Education	3	-	2	2	-	-	2	-	1	10
Engineering & Petroleum	10	6	30	12	1	2	3	5	15	84
Law	-	-	-	-	-	-	1	-	-	1
Medicine	13	35	39	4	4	3	1	6	12	117
Pharmacy	3	1	5	1	1	-	-	1	1	13
Science	15	18	70	1	4	5	5	1	21	140
Sharia	4	-	-	1	-	-	1	-	-	6
Social Sciences	8	3	2	4	-	-	2	2	1	22
Women	8	2	2	2	1	1	-	1	-	17
<b>TOTAL</b>	<b>96</b>	<b>69</b>	<b>161</b>	<b>32</b>	<b>11</b>	<b>13</b>	<b>24</b>	<b>19</b>	<b>54</b>	<b>479</b>
	└── 326 ─┘			└── 56 ─┘			└── 97 ─┘			

\* Source KURA, Data upto January 31, 2012.

\*\* Values in KD.



It is within this frame of reference, several external participants, currently involved in the sustenance of faculty research at KU, included Kuwait Foundation for the Advancement of Sciences (KFAS) sponsoring 22 (68.7%) projects, Kuwait Petroleum Corporation (KPC) supporting 3(9.4%) projects, Kuwait Oil Company (KOC) supporting 1(3.1 %) project, as well as 1( 3.1%) project each sponsored by UNESCO, Novo Nordisk Company (NOC), Kuwait National Guards (KNG), United Nations Environment Program (UNEP), Kuwait Massachusetts Institute of Technology (MIT), and AstraZeneca (Table 4). As regards 97 under-process projects, 84(86.6%) projects were lined-up for KU's funding support, while an additional 13(13.4%) projects sought external support (Ref. Table 2).

Faculty research by Types of Grants is presented in Table 5, providing a numeric outlook of faculty-wise participation in ongoing research (326), with largest volume of ongoing projects figuring under the University Research grants 204(62.6%) category. The remaining projects were distributed over 50 (15.3%) Graduate students projects, 30(9.2%) External projects, 18 (5.5%) General Facility projects, 15(4.6%) RIG grants, 8(2.5%) Priority Research Projects, and 1 (0.3%) National Research

( Contd. P.29... ► )

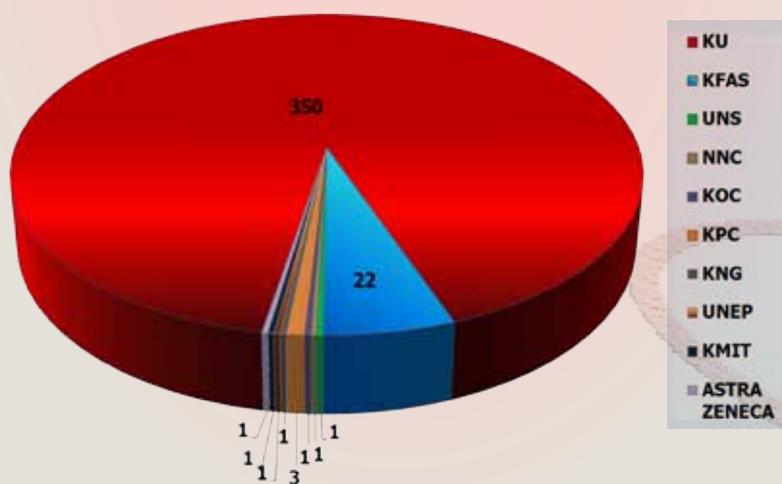
► **Statistics on Faculty Research** ...*(From P.28)*

**Table 4. TOTAL ONGOING & COMPLETED RESEARCH PROJECTS by FUNDING SOURCE, 2011/12**  
(Sept. 1, 2011 to Jan. 31, 2012)

FACULTY	KU	KFAS	UNS	NNC	KOC	KPC	KNG	UNEP	KMIT	ASTRA ZENECA	TOTAL
Allied Health Sciences	6	1	-	-	-	-	-	-	-	-	7
Arts	11	2	-	-	-	-	-	-	-	-	13
Business Admn.	8	-	-	-	-	-	-	-	-	-	8
Dentistry	24	2	-	-	-	-	-	-	-	-	26
Education	5	2	-	-	-	-	-	-	-	-	7
Engineering & Petroleum	56	1	-	-	-	2	1	1	-	-	61
Law	-	-	-	-	-	-	-	-	-	-	-
Medicine	91	5	-	1	-	-	-	-	-	1	98
Pharmacy	11	-	-	-	-	-	-	-	-	-	11
Science	102	8	-	-	1	1	-	-	1	-	113
Sharia	5	-	-	-	-	-	-	-	-	-	5
Social Sciences	16	1	-	-	-	-	-	-	-	-	17
Women	15	-	1	-	-	-	-	-	-	-	16
<b>TOTAL</b>	<b>350</b>	<b>22</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>3</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>382</b>

\* Source KURA, Data upto January 31, 2012.

- KU Kuwait University
- UNESCO UNESCO
- KOC Kuwait Oil Company
- KNG Kuwait National Guards
- KMIT Kuwait Massachusetts Institute of Technology
- KFAS Kuwait Foundation for the Advancement of Sciences
- NNC Novo Nordisk Company
- KPC Kuwait Petroleum Corporation
- UNEP United Nations Environmental Program



project. These figures indicated University Research grants to be the most preferred Grant category for faculties for pursuing research, while the remaining 124(25.9%) grants reflected faculties cumulative participation in the other categories of grant support. Statistics on completed projects also showed maximum project-completion under the University grants (30, 53.6%) category, while other completed projects included 5(8.9%) RIG grants, 9

(16.1%) Graduate Projects, 2(3.5%) External grants, and 1 (1.9%) Priority research project. In addition, 64(66%) newly submitted projects also figured under the University Grants category, while 13 (13.4%) under-process projects were listed under the External Research grants, and 7(7.2%) projects were being processed for Graduate Students grants, additional 7(7.2%) projects were the General Faculty grants, 4 (4.1%) were Priority Research projects, and 1(1%)

project each was listed under RIG and University Service projects categories. No projects, however, were listed under the GCC Grants category up to Jan. 2012 (Table 5).

Coming to research productivity, a comparative view of faculties published research, over the last five calendar years, is presented in Table 6, providing an analytical view of faculties published output from completed projects. The calendar years in focus were 2007, 2008, 2009, 2010 and 2011, exhibiting the faculties productivity levels, which reached 151 published papers during the calendar year 2007, 170 during 2008, 157 during 2009 and 156 during 2010, and 101 during 2011 (Table 6). The figures for 2011 are, however, tentative, and likely to increase further with the publishing of currently accepted/submitted papers lined-up for inclusion as full journal articles, in view of the “time-factor” involved in manuscript review, acceptance and actual appearance in journal(s) as published article(s). Hence, research productivity levels concerning published papers invariably remain in the state of upward mobility with the inclusion of additional published papers largely in recent calendar year(s).

The above statistical profile of faculty research, over the span of five months (Sept. 2011 – Jan. 2012), reflects the level and range of faculties participation in RS Grant Support System, a system having endured through the years in the sustenance of faculty research, has enormously strengthened the institutional scientific foundations, spearheading progress and improvements in the awards system. Yet, contemporary needs and developmental priorities continue to necessitate adoption of reformatory principles and practices that could bolster faculties participation in funded research, and create a conducive climate for scientific innova-

(Contd. P.32... ►)

## ► Recipients of Research Rewards ...*(From P.23)*

### Year 2011

1. Ali, SH; Al-Rashed, O; Azeez, FA; Merchant, SQ: " Potential biofuel additive from renewable sources-kinetic study of formation of butyl acetate by heterogeneously catalyzed transesterification of ethyl acetate with butanol." Journal of Bioresource Technology, 2011, 102, pp. 10094-10103. (Bioresource Technology Journal is listed 9<sup>th</sup> out of 79 in Energy and Fuels category).
2. Baker, CG; Al-Mansour, HE; Al-Busairi, BH: " Energy consumption of a pilot-scale spray dryer." Journal of Drying Technology, 2011, 29(16), pp. 1901-1910. (Drying Technology journal is listed 17<sup>th</sup> out of 122 in the Mechanical engineering category).

### Faculty of Medicine

#### Year 2011

1. Shehab, DK; Al-Jarallah, K; Abraham, M; Abdella, N; Mojiminiyi, OA; Al-Mohamedy, H: " Back to basics: Ankle reflex in the evaluation of peripheral neuropathy in type 2 diabetes mellitus." Quarterly Journal of Medicine, November, 8, 2011. ( Quarterly Journal of Medicine is listed 33<sup>rd</sup> out of 153 in the General & Internal Medicine category).

### Faculty of Science

#### Year 2011

1. Boumenir, A; Tuan, VK: "Recovery of the heat coefficient by two measurements." Journal of Inverse Problems and Imaging, 2011, 5(4), pp. 775-791. (Inverse Problems and Imaging journal is listed 41<sup>st</sup> out of 236 in the Applied Mathematics category).
2. Kanso, A: "Self-shrinking chaotic stream ciphers." Journal of Communications in Nonlinear Science and Numerical Simulation, 2011, 16, pp. 822-836. (Communications in Nonlinear Science and Numerical Simulation Journal is listed 6<sup>th</sup> out of 236 in the Applied Mathematics category).

### Faculty for Women

#### Year 2011

1. Yassin, MF; Elmi, AA: " Stochastic analysis of concentration field in a wake region." Journal of Environmental Science and Pollution Research, 2011, 18, pp. 270-281. (Environmental Science and Pollution Research Journal is listed 39<sup>th</sup> out of 193 in the Environmental Sciences category).

## C. Winners of Incentive Rewards for Excellence in Final Report

### Faculty for Allied Health Sciences

#### Year 2011

1. Al-Awadhi, R: " Distribution of human Papillomavirus types and viral load in thinprep papanicolaou tests classified according to the Bethesda 2001 terminology and correlation with biopsy outcome of the uterine cervix." Final Report of Project NM03/06.

### Faculty for Women

#### Year 2011

1. Al-Dallal, J: " Impact of inheritance on class cohesion measurement." Final Report of Project WI06/09.
2. Zafar, T: "The effect of whey protein on glycemic response, appetite and food intake in healthy Kuwaiti families." Final Report of Project WF02/09.

## Prof. Chris Rapley from University College London visits Office of Vice President for Research

### *Visiting delegate shares thoughts on climate change*

Prof. Chris Rapley, Professor of Climate Science at the University College London (UCL), along with Dr. Hala Jassar from Physics department, Science Faculty, visited the Office of Vice President for Research on April 2, 2012, and were received by Prof. Hasan Al-Sanad, Vice President for Research, and his assistant, Prof. Haitham Lababidi, with the meeting providing opportunity for sharing thoughts on activating the existing collaboration with UCL to carry forward the research process, in addressing key areas of priority research, including environment and climate concerns. Prof. Rapley, who was visiting Kuwait University for a seminar on Climate Change, on an invitation from Physics dept., is an authority on Earth's climate system, having researched its geological history, with supportive evidence on how human activities were changing global climatic system, and affecting humanity. Expressing concern that the remedial efforts fell far short than the actual needs, he emphasized reliance on scientific communica-

### *Meeting to activate RS-UCL collaboration*

tion to raise global sensitivity on climate change.

The meeting at OVPR reinforced RS already existing collaboration with the University College London, providing opportunity for further cementing the coordination bonds through well defined studies in areas of mutual interest, marking the significant coming together of the two institutions in advancing research.

The meeting was followed by a seminar, entitled "Climate Change: Will we cope?" organized by the Physics dept., where Prof. Rapley outlined key climatic concerns, with a perspec-



▲ RS receives UCL Delegate

tive on global climate change, risks, adaptation and remediation. Prof. Rapley, whose research interests include earth system science, climate change, leadership and communication, holds a degree in Physics from Oxford, M.Sc. in Radioastronomy from Manchester University, and Ph.D. in X-ray astronomy from University College London. He is the Fellow of St. Edmund's College, Cambridge, a distinguished visiting scientist at NASA's Jet propulsion laboratory in Pasadena, California, and has made "a significant contribution to the understanding and wellbeing of humanity," for which he was awarded the 2008 Edinburgh Science Medal. □

## Two RS staff honored & awarded at successful completion of KU Administrative Development Program

### *Training towards preparing future leadership cadres...!*

In its efforts to develop staff skills and performance, the Research Sector nominated two of its employees to participate in the training program on future administrative and leadership cadres, organized by Kuwait University Department of Administrative Development & Training. An intense 6-weeks annual program, subjects the participants to a series of lectures on various administrative and management functions, including decision-making, problem-solving

and time-management, the key elements in enhancing productivity and improving performance.

The program was successfully completed by two RS nominees, Yusra Al-Asoosi, Head of project analysis dept., who participated in the training entitled, "To prepare another generation of leading administrators, the Future Leaders," held during the period Feb. 13, to March 31, 2011, and Amal BuGamaz, at RS Re-

search Services Unit, Office of External Collaboration, who attended the training on, "The Fifth Future Leaders," from Nov. 13, 2011 to Feb. 13, 2012. The rigorous 6-weeks program was followed by written examination, which was successfully cleared by RS participants, who were subsequently honored and awarded mementos at a ceremony organized by KU General Secretariat Office, amidst a gathering of officials, participants, and media. □

► Statistics on Faculty Research ...(From P.29)

tion and creativity. This purpose has been the key driving force for the Research Sector to look inwards for valid reformations, to put the system in facilitative mode, receptive

5. TOTAL RESEARCH ACTIVITY by TYPES of GRANTS  
Academic Year 2011/12\*\* (Sept. 1, 2010 to Jan. 31, 2012)

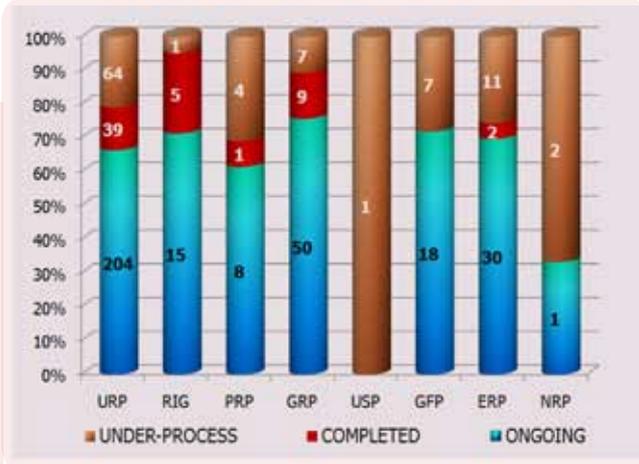
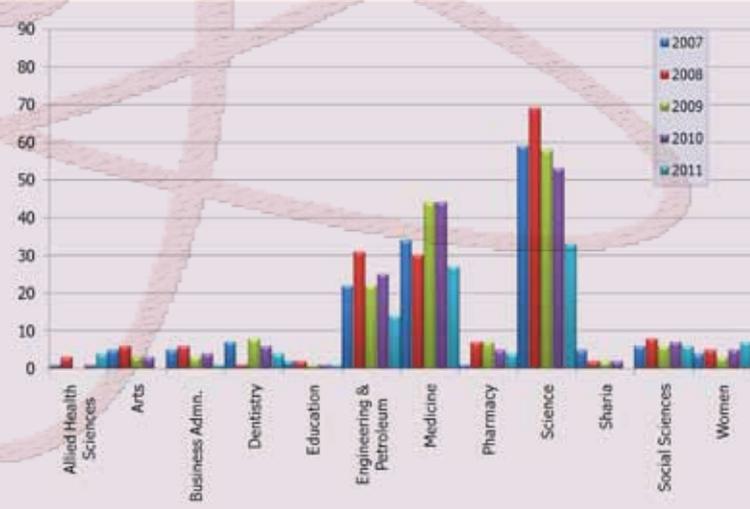
FACULTY	Types of Grants																								TOTAL
	URP			RIG			PRP			GRP			USP			GFP			ERP			NRP			
	O	C	U	O	C	U	O	C	U	O	C	U	O	C	U	O	C	U	O	C	U	O	C	U	
Allied Health Sciences	4	1	7	1	-	-	-	-	2	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	16
Arts	9	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	14
Business Admn.	3	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10
Dentistry	16	2	2	2	1	-	2	-	-	-	-	-	-	-	-	1	1	1	1	1	-	-	-	-	29
Education	3	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	1	2	-	-	-	-	-	-	10
Engineering & Petroleum	34	11	18	-	3	-	3	1	2	-	-	-	-	-	-	4	-	-	5	-	2	-	-	1	84
Law	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Medicine	43	5	5	1	1	-	-	-	-	33	5	6	-	-	2	2	2	7	-	6	1	-	-	-	117
Pharmacy	7	2	2	1	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13
Science	63	5	18	-	-	-	-	-	-	17	4	1	-	1	11	-	3	10	1	3	-	-	-	1	140
Sharia	3	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6
Social Sciences	10	4	5	2	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	22
Women	9	4	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	17
<b>TOTAL</b>	<b>204</b>	<b>39</b>	<b>64</b>	<b>15</b>	<b>5</b>	<b>1</b>	<b>8</b>	<b>1</b>	<b>4</b>	<b>50</b>	<b>9</b>	<b>7</b>	<b>-</b>	<b>-</b>	<b>1</b>	<b>18</b>	<b>-</b>	<b>7</b>	<b>30</b>	<b>2</b>	<b>11</b>	<b>1</b>	<b>-</b>	<b>2</b>	<b>479</b>

\*\* O Ongoing (326) C Completed (56) U Under-process (97)  
 \* Date upto July 31, 2011.  
 URP = University Research Projects  
 RIG = Research Initiation Grants  
 PRP = Priority Research Projects  
 GRP = Graduate Research Projects  
 USP = University Service Projects  
 GFP = General Facilities Projects  
 ERP = External Research Projects  
 NRP = National Research Projects

Table 6. PUBLISHED PAPERS, COMPARATIVE Five CALENDAR YEARS\*,  
2 0 0 7, 2 0 0 8, 2 0 0 9, 2 0 1 0 & 2 0 1 1

FACULTY	Calendar Years				
	2007	2008	2009	2010	2011
Allied Health Sciences	1	3	-	1	4
Arts	5	6	3	3	-
Business Admn.	5	6	3	4	1
Dentistry	7	1	8	6	4
Education	2	2	1	1	1
Engineering & Petroleum	22	31	22	25	14
Law	-	-	-	-	-
Medicine	34	30	44	44	27
Pharmacy	1	7	7	5	4
Science	59	69	58	53	33
Sharia	5	2	2	2	-
Social Sciences	6	8	6	7	6
Women	4	5	3	5	7
<b>TOTAL</b>	<b>151</b>	<b>170</b>	<b>157</b>	<b>156</b>	<b>101</b>

\* Figures for Published papers both refereed / unrefereed, coordinate with calendar year (Jan. 1 to Dec.31).



to researchers needs, and stimulating their enhanced participation in research. An array of flexible and supportive measures have, therefore, been introduced by the Research Sector to extend enhanced services and motivate faculties towards amplifying their participation in scientific research. Some of the recent facilitative measures, currently being implemented, include new incentive scheme for small-project-related purchases, enhanced mission allowance, updated processing plan for small-budgeted grants up to KD 4,000/-, and launching of the e-application to facilitate researchers in online submission of proposals.

Given that RS is building the support system's inner strengths, its outside mission remains equally challenging to realize KU's aspirations to gain international mileage and be placed among the league of world class universities based on its scientific strengths. The challenge is also there to address dominant national, scientific and community concerns, the objectives that are central to RS current priorities to achieve distinguished high quality outputs that serve society and hold scientific and social significance, vital for putting KU firmly on the path to progress, recognition and international credibility.

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