



# Water Research Centre

First point of contact for Water Researchers in Oman

November 2011

## Director's Message



On October 2, 2011 Prof. Anvar Kacimov has been appointed as a new Director of the SQU Water Research Center. Prof. Kacimov is a faculty member at the College of Agricultural and Marine Sciences, Department of Soils, Water and Agricultural Engineering. His message is:

WRC addresses research aspects of water-related challenges through coordination of fundamental and applied studies, collecting and archiving data on traditional and innovative water technologies and experience, networking, training and capacity development, facilitation of consultancy services and extension. All this is mostly related to arid and semi-arid conditions of the region, where managing water resources is arduous.

The Centre was established by Sultan Qaboos University and focuses in the following main fields:

- Groundwater
- Desalination
- Surface water
- Socioeconomics of water in arid climates
- Agricultural water management
- Hydrogeology

The Centre works closely with several national and international agencies and companies and with colleges and centres within SQU to address the issues of groundwater development, depletion and contamination, flood hazard mitigation, water supply to agriculture, industry and municipalities, rational irrigation and crop production, water-sustainable biota, among others. WRC hosts a Desalination and Nanotechnology Chair who coordinates and provides thesis projects and financial sponsorship for students in PhD.

## Meeting of the Water Supply Committee



SQU constituted a committee chaired by Prof. Kacimov and consisting of Dr. O.Abdalla, Dr.Kotagama, Dr Mohammed Al Abri, Eng Sulieman Abdullah Al Habsi, Eng Abdullah Saud Al Habsi and Eng Louis Blih. The task of the committee is to assess water supply

and control on SQU campus, in particular, groundwater pumping, water quality, and storage, among others. A special focus of the committee is to assess sustainability of water supply in emergency situations when regular municipal sources are not available. Mr. Khalifa, Deputy Director of the SQU Agricultural Experimental Station helps in the survey and inventory of SQU wells.

## Meeting with Delegation from UAEU



On October 1, 2011 Prof. Kacimov and Dr. Mumtaz from WRC met a delegation from UAEU University, which included the Dean of Faculty of Science, Prof. Peter Werner. Issues of common interest in hydrogeology, irrigation water quality, sea water intrusion, among others were discussed.

## Meeting with the Dean of Foundation Program, SQU

The Director of WRC meet the Dean of the SQU Foundation Program, Prof. Ali Yousif. WRC provided information on water-related issues in Oman. Potential contribution of the WRC staff to the Foundation Program, in particular, potential lectures on basic hydrology, water treatment and water quality, hydrogeology, among others were discussed.

## Microbial Contamination through irrigation water (*E.coli* carry-over mechanism in cucumber)



This summer, world witnessed a lethal outbreak of *E. coli* started from Germany, where death toll risen to 50 and over 4000 people suffered serious to minor illness alone in Germany. This unusual outbreak spread rapidly, and attacked adults in general as compared to elderly people

and young children which are normally considered at risk to such diseases. The *E. coli* has been confirmed as a pathogen associated with this horrific outbreak. Early reports suspected organic cucumber from Spain as the source of this deadly outbreak, however, later epidemiological investigations have now confirmed bean sprouts as the carrier of this killer disease.



To investigate how such microorganisms can be carried over to the edible parts of cucumber collaborative study is currently underway at WRC, AES and microbiology laboratory facility (SQU) where contaminated water and soil is being monitored to see its role in transmission of *E. coli* or other contaminants from soil/water

to plant parts such as fruit, stem and leaf.



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Prof. Joydeep Dutta joined the Sultan Qaboos University as a Chair Professor in Nanotechnology for Water Desalination and other applications in October 2011. He was the Vice President (Academic Affairs), Director of the Center of Excellence in Nanotechnology and a Professor in Nanotechnology at

the Asian Institute of Technology (AIT), Bangkok, Thailand, whose faculty he joined in April 2003. He completed his Ph.D in 1990 from the Indian Association for the Cultivation of Science, India (Calcutta University). In 1991 and 1992 he did Post Doctoral work at the Electrotechnical Laboratory (ETL, Japan) and at Ecole Polytechnique (France) before moving to Switzerland in 1993 where he was associated with the Swiss Federal Institute of Technology (EPFL), Lausanne, Switzerland until 2003. His broad research interests include nanomaterials in nanotechnology, self-organization, Microelectronic devices, nanoparticles and its applications in electronics and biology. From 1997-2001 he worked in technical and managerial qualities in high technology industries in Switzerland before returning back to academia in 2002. He has been the member of the board of two companies working in high technology electronics and environmental consulting respectively.

He is a Fellow of the Institute of Nanotechnology (IoN) and the Society of Nanoscience and Nanotechnology (SNN), Senior Member of the Institute of Electrical and Electronics Engineers (IEEE), USA, founding member of the Thailand Nanotechnology Society, and member of several professional bodies including Materials Research Society (MRS), USA, American Association for Advancement of Science (AAAS), USA, Society of Industry Leaders, USA, Gerson Lehrman Group Council, USA, Asia-Pacific Nanotechnology Forum (APNF), Australia, The NanoTechnology Group Inc., USA, UK Futurists Network, United Kingdom, The Science Advisory Board, US amongst others. He has served to review projects of various scientific organizations of different countries and has organized a few international conferences and served as a member in several others.

Prof. Dutta is an *award winning author* (Choice award for Outstanding Academic title of 2010 from American Library Association) of the book "Fundamentals of Nanotechnology". He has also written two other text books entitled "Introduction to Nanoscience" and "Introduction to Nanoscience and Nanotechnology" (CRC Press of Taylor and Francis Group LLC). Prof. Dutta has over 200 research publications, with more than 950 citations (Scopus), 11 chapters in Science & Technology reference books, 5 patents (9 ongoing applications) and has delivered over 60 invited and keynote lectures.

## Chair Professor in Nanotechnology for Water Desalination and other applications

He is in the editorial board of the Journal of Bionanoscience (American Scientific Publishers), Nanoscience & Nanotechnology-ASIA (Bentham) and regularly referees articles in international journals.

He has taught Nanomaterials & Nanotechnology, colloids, photocatalysis, nanothermodynamics, Microelectronics Fabrication Technology, Optoelectronic Materials and Devices, Failure Analysis of Devices and Emerging Technologies. He was a visiting Professor (1997-2009) at EPFL in Switzerland, in Uppsala University (2003-2005) and Royal Institute of Technology (2005- 2010), both in Sweden. He has extensive experience in delivering short-course modules in Nanomaterials and Nanotechnology, which lately he has conducted in Thailand, Malaysia and Sweden.

## Meeting of the Nanotechnology Group



On October 19, 2011 Prof. Dutta organized a meeting of the Nanotechnology group. The following SQU faculty and staff Dr. Salim Al-Harti, Dr. Ashraf Talib Al Hinai, Dr. Mohammed Al-Abri, Dr. Sulaiman Al-Obaidani, Prof. Anvar Kacimov, Dr. Nabeel Z.

Al-Rawahi, Dr. Mumtaz Khan, Mr. Saif Al-Khamisi, Amani Al-Siyabi & Jacquie Pascua participated on first meeting held in WRC. Prof. Dutta presented a talk on his vision of nanotechnology in Oman and at SQU. The group discussed fundamental research and applications of nanotechnology in Omani water-related sectors of economy.

## Meeting with the Chair of Environmental Research, Sohar University



On October 30, 2011 the WRC staff, Prof. Dutta and Prof. Kacimov, met Prof. Tony Griffings, Center of Environmental Research, Sohar University. Prof. Dutta gave an overview of research and development activities in nanotechnology-driven

environmental engineering and sciences. Projects of mutual interest in reedbed clean-up of wastewater and energy conser-