E-News Letter
Interdisciplinary Research Center in Biomedical Materials (IRCBM)
Issue No.1, Volume No. 2

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Table of Contents

News _________________________ 2
Visits _________________________ 3
New Faculty ________________ 8
Research at IRCBM ______ 9
IRCBM is organising a 1-day workshop "Introduction to Balanced Scorecard" to be held on 8th April 2010. The Balanced Scorecard (BSC) is the world's most effective and robust framework for designing and implementing strategic objectives. It assists companies overcome key issues during strategic alignment of various business functions and setting performance objectives in line with corporate mission and vision.

Two new microbiologists joined in February 2010 to carry out biological testing of IRCBM products.

IRCBM is holding a 2 Days International Symposium on “Biomedical Materials: (Current Research and Future Sign Postings) 2010 in July 2010. Many national and international speakers are invited to share their expertise and opinion about this emerging field of science.

IRCBM has started its in-vivo characterization in collaboration with MAYO HOSPITAL, Lahore.

IRCBM has received binocular/ trinocular metallurgical microscope. This will help to speed up our characterization process.
On 5th January 2010

Chief Minister Gilgit/Baltistan Syed Mehdi Shah visited IRCBM on Jan 5th 2010. Chief minister, worthy rector and director CIIT visited the IRCBM labs and they were warmly welcomed by Dr. Rafaqat along with other faculty members. Dr. Aqif riefed the guest about aims, objectives, ongoing projects and future goals of IRCBM. Chief Minister appreciated IRCBM’s efforts regarding Biomaterial’s research perspective in Pakistan.
On 14th – 15th January 2010
Dr. Anila Asif (Associate professor, IRCBM) attended a 2 days seminar at Lahore College for Women University, Lahore titled as “International Seminar On New Trends In Chemistry”. She presented her research paper named “Novel shape memory material based on hyperbranched polyurethane-tetrazole; synthesis and characterization”. The presentation was highly appreciated among the audience.

On 20th January 2010
Dr. Rafaqat Hussain, Dr. Anila Asif, Dr. Aqif and Mr. Usman visited Pakistan Standards and Quality Control Authority (PSQCA) on 20th January 2010. IRCBM team wanted to determine the presence of standards in relation to Biomaterials and their implementation in Pakistan. Mr. Ghulam Murtaza (deputy chief, PSQCA) hosted the IRCBM team. PSQCA has standards related to many metallic parts. Standards for IRCBM interest were those regarding surgical goods and stainless steel. PSQCA can also make 304 SS in their premises, however, they are unable to make 316 and 316 L stainless steel grade due to extremely low carbon contents. The list of techniques available at PSQCA Technical Services Centre, Lahore are as follows:

- Chemical Laboratory including Optical Emission Spectrometer, Atomic Absorption Unit, Carbon Sulphur Detection Unit and Calorimeter
- Thermal analysis laboratory including DTA/TGA and Dilatometer
- Physical testing laboratory
- Temperature measurement, Control and Calibration
- Non-destructive testing
- Electric Arc Furnace
- High Frequency Induction Furnaces
On 22nd February 2010

Mr. Muhammad Usman (Project Manager, IRCBM) attended a two week training course on Foresight from 22nd February to 5th March, 2010 at COMSTECH Secretariat, Islamabad. Participants (Science and Technology Managers, Policy Planners and Policy Researchers) from 8 OIC (Organization of Islamic Conference) member states attended the training course.

The main objective of the course was to give an insight to the participants about the following topics

- Thinking about the future, rationales and objectives of Foresight; and Introduction to Foresight methods. Environmental scanning; forecasting; Delphi; and creative methods of envisioning future.
- Developing and using scenarios; fitting things together – the ‘jigsaw’ method and the causal layered analysis (CLA).
- Planning a foresight exercise; future technological prospects; social foresight; and regional and national foresight case studies.
- Foresight outputs, implementation, and evaluation.

The course was conducted by experts from The Manchester Institute of Innovation Research, The University of Manchester, UK; The Graduate Institute of Future Studies, Tamkang University, Tamsui, Taiwan; and The Centre for Science, Technology and Innovation Policy Research and Training of the OIC Standing Committee on Scientific and Technological Cooperation (COMSTECH), Islamabad.
On 4th March 2010
Dr. Aqif held a meeting with Prof Syed Mohammad Awais, (Pro Vice Chancellor and Chairman, Department of orthopedic surgery, Mayo hospital) and Dr. Azeem on 4th March 2010. Dr Aqif showed the discs and powder that was prepared by IRCBM team for animal testing. The size of bioceramic discs, rabbit specifications (age, gender, weight) and surgery site were discussed during the meeting.

On 11th March 2010
Dr. Aqif along with research associates from IRCBM visited Department of Orthopedic Surgery and Traumatology (DOST) in Mayo Hospital Lahore on March 11th, 2010. They held a meeting with Prof Syed Mohammad Awais, Pro Vice Chancellor and Chairman, DOST) and his research team. They briefed IRCBM team about different aspects of animal testing of bone substitute material being synthesized at IRCBM. The IRCBM team prepared the appropriate size of disc required for insertion in rabbit’s leg. It was successfully inserted into the animal’s leg and animal testing protocol was finalized. Dr Awais demonstrated surgical procedure in which he created a bone cavity in rabbit’s hind limb and filled it with bone substitute material synthesized at IRCBM.
**On 25\textsuperscript{th} March 2010**

After the success of first practice session of insertion experiment, a second practice session was held at Mayo hospital, Lahore on 25\textsuperscript{th} March. It was elucidated that surgical protocols developed in the last session were correct. IRCBM and Mayo team are now ready for implantation in live animal.

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**On 30\textsuperscript{th} March 2010**

Dr Rafaqat, Dr Aqif and Dr Anila attended a meeting on *Nanomedicine* at NIBGE, Faisalabad on 30\textsuperscript{th} March, 2010. Dr Aqif presented overview of research activities of IRCBM and highlighted main perspectives to collaborate with different research groups participating from PINSTECH, PIEAS, NIBGE and CIIT Islamabad. Aim of meeting was to pinpoint and explore various interdisciplinary research fields which might be helpful to formulate the action plan about modern field of Nanomedicine at national level.
Ms. Basma Younas  
Research Associate, IRCBM, CIIT Lahore  
Qualifications: B.Sc (Hons) Biotechnology (GCU, Pak)

Research Interests:  
Her B.Sc. project was on “Production of alpha amylase by solid state fermentation using mix culture”. Her current research interests include enhancement of biocompatibility of hydroxyapatite via ionic substitutions and in vitro analysis of implants.

Mrs. Natasha Hussain  
Research Associate, IRCBM, CIIT Lahore  
Qualifications: BS (Hons) (PU, Pak)

Research Interests:  
Her B. Sc. project was “Seroprevalence of hepatitis B and hepatitis C in healthy blood donors” at Omer hospital. She is now working on animal testing of bioceramics and as microbiologist for biological disc rotator for waste water treatment plant.
Research at IRCBM

Projects:

- **Project Title:** Electrophoretic deposition of bioceramics onto 316L SS
  - **Researchers:** Dr. Rafaqat Hussain, Nida Iqbal Khan

- **Project Title:** Densification of Hydroxyapatite
  - **Researchers:** Dr. Rafaqat Hussain, Rabia Nazir

- **Project Title:** Rapid synthesis of Hydroxyapatite and CNT composites
  - **Researchers:** Dr. Rafaqat Hussain, Aftab Akram (NUST)

- **Project Title:** Porous hydroxyapatite scaffolds using PEG
  - **Researchers:** Dr. Anila Asif, Ahsan Bashir, Nafisa Ashraf, Nageen Fatima.

- **Project Title:** Setting of calcium phosphate cements.
  - **Researchers:** Dr. Aqif Anwar, Nageen Fatima, Sana Ejaz, Rabia Nazir.

- **Project Title:** Magnesium substituted hydroxyapatite.
  - **Researchers:** Dr. Aqif Anwar, Nida Iqbal Khan, Natasha Hussain, Ahsan Bashir.

- **Project Title:** Zinc substituted hydroxyapatite.
  - **Researchers:** Dr. Aqif Anwar, Nafisa Ashraf, Basma Younas.

- **Project Title:** Silver substituted hydroxyapatite.
  - **Researchers:** Dr. Aqif Anwar, Basma Younas, Natasha Hussain