



### N.5: Theme Meeting on Atomic and Molecular Science using Indus Synchrotron Facility

A theme meeting on Atomic and Molecular Science (TAMS-2012) using Indus synchrotron facility was held at RRCAT during 4<sup>th</sup>-5<sup>th</sup> March, 2012. Dr. P D Gupta, Director RRCAT, presided over the inaugural function held on 4<sup>th</sup> March 2012. Dr. S Kailas, Director Physics Group, BARC discussed the importance of the theme meetings in improving the research networking for conducting advanced research programs and effective utilization of large scale experimental facilities like Indus. Dr. S K Deb, Head ISUD, gave an overview of the Indus synchrotron sources and Dr. B N Jagatap, Head Atomic and Molecular Physics Division, BARC, discussed the current international research scenario and ongoing activities using Indus facilities in the field of Atomic and Molecular Science. Dr. B N Raja Sekhar, Convener, TAMS-2012 welcomed the delegates, invited speakers and students and invitees attending the function. Dr. Aparna Shastri, Secretary, TAMS-2012, conducted the proceedings of the meeting and proposed vote of thanks.

The meeting was aimed at taking stock of the current developments and future trends in the field and consolidating the existing experimental programs to be taken up on the VUV and soft X-ray beam-lines at Indus-1 and Indus-2 and enhanced utilization of the current facilities and development of new workstations and research programs in collaboration with universities and other academic institutions. The two-day theme meeting focused on research in Photophysics, Photochemistry and Photobiology using Indus synchrotron radiation sources and to bring together researchers from physics, chemistry and biology disciplines for Indus utilization, discuss the current national and international scenario, take stock of the expertise base available in the country, identify and evolve thrust areas, collaborating teams, methods of collaboration and participation of researchers from universities/research institutes in synchrotron radiation based research.

In the inaugural session, the subsequent sessions of the theme meet contained presentations by scientists using Indus for their research programs followed by proposal presentations to start new research programs. These presentations included research areas such as Matrix Isolation, Molecular Ices, Nanostructures, Photonic devices, Molecular Spectroscopy, Photoionisation, Photo-dissociation, gas phase photoemission, clusters etc. delivered by visiting academicians and scientists from BARC, RRCAT, IGCAR, TIFR, PRL, IIT-M Chennai, IISER-Pune, IISER-Mohali, NIISER-Bhubaneswar, Allahabad University, Aligarh Muslim University, Andhra University-Visakhapatnam. In total 60 delegates from outside DAE institutions and 30 people from BARC, RRCAT and IGCAR including students from local universities attended the meeting.

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### N.6: Interaction Meeting on Micro Fabrication using Indus-2: Possible Structures and Devices

An interaction meeting on "Micro fabrication using Synchrotron Radiation Source Indus-2: possible structures and devices" was organized during 11<sup>th</sup>-12<sup>th</sup> March, 2012. Dr. V K Suri, Head Precision Engineering Division, BARC and Dr. S K Deb, Head Indus Synchrotrons Utilization Division were the conveners of the meeting. Around 50 participants from IITs, National research laboratories and Universities attended this meeting. Interaction meeting was inaugurated by Dr. P D Gupta, Director RRCAT. In his inaugural address, he informed participants that a series of focused theme meetings were being organized to promote the utilization of Indus Synchrotron Facility by increasing the user base in the country. Dr. Gupta expressed his happiness to see the gathering of researchers from various disciplines attending this meeting and assured full support to all participants for the utilization of Indus Synchrotron facility. During the meeting, Dr. V K Suri briefed how X-ray lithography can be used for the fabrication of high aspect ratio micro structures. These structures will be scaffolding for micro electro mechanical system (MEMS) development. He described the nano-finishing work carried out by BARC in collaboration with IIT Kanpur. He further informed that a machine for nano-finishing is being developed in the country. Dr. S K Deb gave an overview of the various beam-lines on Indus-2. Prof. Yuichi Utsumi from Laboratory for Advanced Science and Technology, University of Hyogo, Japan delivered a series of talks on X-ray lithography techniques and discussed various MEMS structure fabricated by his group. He explicitly pointed out that facility at BL-07 is quiet useful due to 2.5 GeV operation of Indus-2. Prof K. Rajanna, IISc Bangalore delivered a lecture on Transducers and Sensors. Prof. V K Jain, IIT Kanpur highlighted the work carried out by his group on micro-finishing using various techniques. Dr. G S Lodha, RRCAT Indore delivered the lecture on X-ray lithography and updated about the activities



*Group photograph of participants of interaction meeting at Indus-2*





being carried out at X-ray lithography beam-line of Indus-2. Development of high quality product using LIGA process was the topic of presentation by Prof. Suhas Joshi, IIT Bombay. Prof P Gandhi, IIT Bombay presented the work on Streolithography pertaining to micro-fabrication. Prof. Sudhir Chandra, IIT Delhi discussed about the bulk and surface micromachining of silicon. Dr. R Balusuramaniam, PED BARC discussed about the various products developed at BARC using micro and nano-finishing techniques.

There was a special session dedicated to discuss various avenues of micro-fabrication and to identify new and innovative device which can be fabricated using X-ray lithography facility at Indus-2. In this session, some of the products identified for further developments were: micro motors, micro actuators, 3D high aspect ratio structures for application in optical and environmental area, etc. During the meeting, need of involvement of R&D institutes and industries was also discussed. It was emphasized that frequent meetings for fixing future direction in the area of Semiconductor, MEMS and Nanotechnology should be undertaken at regular intervals.

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## N7: Director HBNI visited RRCAT

Prof. R. B. Grover, Director, Homi Bhabha National Institute visited RRCAT, which is a constituent institute of HBNI on 19<sup>th</sup> January, 2012. During his visit he addressed the faculty members and PhD scholars of HBNI in the auditorium of BARC Training School at RRCAT. In his address, Prof. Grover gave a presentation encompassing various aspects of HBNI, including a detail statistics on the enrolments in various academic programmes. Prof. Grover emphasized the role of 'doctoral committees' in ensuring the quality of the Ph.D. programme in HBNI. He also highlighted that the large number of competent faculty members and well equipped laboratories are strengths of HBNI, but the facilities for the students including hostel need some improvement. He noted that the next phase of expansion of HBNI would begin with opening of a fully fledged campus at Vizag. After his presentation Prof. Grover answered various questions asked by the faculties and scholars ranging from purely academic to welfare issues.

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## N.8: Women's Day celebrated at RRCAT

Women's Day was celebrated at RRCAT on 13<sup>th</sup> April 2012 highlighting the theme "Health and Fitness". The programme was organised in two sessions: pre and post lunch session. In the first session, athletic events were organized after dividing the participants into two groups. Group "A" had participants below 40 years of age and Group "B" consisted of

the participants above 40 years of age. The first event was a 100 meters race. 15 women in Group "A" and 16 in Group "B" participated in this event. Ms. Anju Bhati won in Group "A" and Ms. Preetha Jaikumar won in Group "B". The second event was 2x100 meters relay race. 7 teams in Group "A" and 10 teams in Group "B" participated in this event. Winner team of Group "A" consisted of Ms. Rejina Mathews and Ms. Neha Modi. In Group "B" Ms. Kirti Labhshetwar and Ms. Preetha Jaikumar were the winners. After a short tea break, a cycle race was organised. There were 13 participants in Group "A" and 6 participants in Group "B". Ms. Ranjana Rathore won the race in Group "A" and Ms. Kamla Aasiwal was the winner in Group "B". Ms. Krishna Gupta flagged the cycle race. The last event of the pre lunch session was fast walk competition. It was a mass gathering without any age bar. More than 50 participants took part in 1 km fast walk from Palace Gate to Guest House.



*Participants preparing for an athletic event during Women's Day Celebration at RRCAT*

Ms. Urmila Singh and Ms. Ranjana Rathore jointly won the race. Ms. Ritu Rajan Chavan, DCSO flagged the race. The session received overwhelming response from all the participants. Mr. Sanjeev Sharma, Sports Teacher, AECS and Ms. Aasha Narang, Ex Sports Teacher, AECS, helped in organising the events along with five national level players of AECS and judged the track events.

The post lunch session was devoted to Yoga and Naturopathy. Mr. Sharad Sanghavi, President of Yoga and Naturopathy Kendra and Dr. Saroj Dosi of Naturopathy were the guests for the session. Ms. Gitika Khare and Ms. Bhavna Merh welcomed the guests with bouquet. The session began with welcome address by Dr. Alka Ingale, Chairperson, Women Cell RRCAT. She pointed out the need of health awareness among women explaining the theme of the programme. Ms. Prabjot Singh declared the prizes of various athletic events held in the pre-lunch session. Mr. Sharad Sanghavi gave a lecture cum demo of Yoga explaining the importance of Yoga in daily life. He discussed how various diseases can be treated by Yog kriyas. He also gave demo of simple Yogasans and Om chanting. Dr. Saroj gave a lecture on Naturopathy and explained the importance of naturopathy in treating different diseases. She emphasized on the use of natural food products in daily life. After the lecture, there was