



long association with Dr. S.K. Deb, recollected their thoughts and feelings. This session concluded with a talk by Dr. P.D.Gupta Director RRCAT, who recollected the various contributions made by Dr. Deb towards the progress of Indus beamline development and their utilization. A collection of all the publications from Indus-1 and Indus-2 in the last two years was also presented to Dr. Deb by Dr. P.D.Gupta on this occasion.

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## N.6: One Day Conference on Non-equilibrium Superconductivity & Magnetism

On behalf of the Materials and Advanced Accelerators Sciences Division, a one day conference on "Non-equilibrium Superconductivity & Magnetism" was organized on 20th December 2013 to honor Dr. P. Chaddah on his superannuation. The Occasion was used as an opportunity to recapitulate and review the scientific activities of the Low Temperature Physics Laboratory of RRCAT (renamed later on as the Magnetic & Superconducting Materials Section) over the last 22 years. The scientific activity in this laboratory was first started on "Non-Equilibrium Superconductivity" and then the horizons were expanded to Non-Equilibrium Magnetism and its role on various functional magnetic materials.

Dr. P. D. Gupta, Director, RRCAT, in his welcome remarks appreciated the efforts to start the Low Temperature Physics Laboratory. He highlighted the scientific contributions made by this laboratory in the area of Non-equilibrium Superconductivity & Magnetism. He emphasized that such contributions have not only made international scientific community to notice this laboratory but also recognized and accepted their systematically researched ideas. He encouraged the research group to continue in their endeavors, and the younger generation to understand the importance of the courage to get their ideas peer reviewed and the importance of constructive interactions with people from different fields.

Among the invited speakers, Prof. A. K. Nigam from Tata Institute of Fundamental Research Mumbai shared the exciting results and the understanding that was developed over a period of time in collaboration with Low Temperature Physics Laboratory, RRCAT on-antiferromagnetism, metamagnetism and first order transition in pure and doped CeFe<sub>2</sub> compounds. Dr. Alok Banerjee, from UGC-DAE Consortium for Scientific Research, Indore, shared his experience of working on-tunable metastability in magnetic oxides.



*Dr. P. D. Gupta, Director, RRCAT and Dr. S. B. Roy, Head MAASD presenting the Memento to Dr. P. Chaddah in the presence of the members of Low Temperature Physics Laboratory and the invitees.*

Among the speakers from RRCAT Dr. S. B. Roy shared his early experience of working in "Non Equilibrium Superconductivity: Critical Current and Vortex Matter", when there was hardly any experimental infrastructure available, but still quite exciting and interesting results leading to newer ideas could be obtained and shared with the scientific community across the world through scientific publications. Such newer ideas were subsequently applied in the area of magnetism, and this was elaborated by Dr. Meghmalhar Manekar in his talk on the "Phase Co-existence across First Order Magneto-Structural Transitions". He drew the attention of the audience by showing a video clip of formation of ice from the supercooled water by simply tapping the bottle and emphasized that the interesting phenomenon of first order phase transition could be experienced in our kitchen! Dr. M. K. Chattopadhyay talked about the "Properties of Magnetic Materials across the Disorder Influenced First Order Magneto-Structural Transition". He presented various distinctive features associated with such phase transitions, and the commonality of physical behavior amongst different class of magnetic materials across such phase transitions. Dr. Kanwal Jeet Singh Sokhey talked about the "Manifestation of First Order Transition in Magneto-Transport Properties", and then Dr. Vishnu Kumar Sharma shared his experiences of working in new class of materials and gave his talk on "Magneto-structural Transitions and Associated Multi-Functional Properties of Ferromagnetic Shape Memory Alloys". Dr. P. Chaddah shared his experiences of working in this area for the last few decades, and on the difficulties faced while convincing the scientific community of the world about the "Access to Magnetic Fields and understanding First Order



Transitions".

The members of the Low Temperature Physics Laboratory took this occasion for introspection as individuals, team members and as a group, and experienced the satisfaction about what they have achieved while doing the scientific experiments in the lab or having discussions openly or privately and thinking on the future directions. In the end of the conference a memento was presented to Dr. P. Chaddah by Dr. P. D. Gupta on behalf of the group.

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## **N.7: DAE (Excellence in Science, Engineering & Technology) Awards 2012**

The DAE awards scheme was instituted in the year 2006 to recognize outstanding accomplishments and exceptional achievements of the DAE staff, who are engaged in scientific research, technology development, engineering/project implementation, teaching, health-care and support services. These awards are given annually. The awards for the year 2012 were given on the eve of Founder's Day on October 30, 2013 in BARC. These were presented to the winners by the Chief Guest, Dr. Srikumar Banerjee, Former Chairman, Atomic Energy Commission. The following scientists/engineers from RRCAT bagged the DAE awards for the year 2012:

Homi Bhabha Science & Technology Award carries a Citation, a Medal and a Cash Award of Rs 5 Lakh. There were nine award winners: Eight from BARC and one from RRCAT. Dr. Shovan K Majumder was the award winner from RRCAT.



**Dr. Shovan K. Majumdar**, SO/G & Head, Optical Spectroscopy & Diagnostic Lab, Laser Biomedical Applications and Instrumentation Division, RRCAT was conferred the Homi Bhabha Science & Technology Award for the year 2012 for his exceptional contribution in the development and evaluation of optical spectroscopy techniques for cancer diagnosis. His work has helped in improving the understanding of fluorescence and Raman scattering from human tissue and established the potential of optical spectroscopy for noninvasive diagnosis of cancer. A particularly noteworthy contribution of Dr. Majumder has been the development of state of art statistical pattern recognition based diagnostic algorithms that have significantly improved the classification accuracy. Dr. Majumder has also made use of his extensive experience of

clinical evaluation of the use of optical spectroscopy systems for diagnosis of the cancer of oral cavity to come up with a very compact, USB powered, LED based diagnostic system equipped with a very user friendly software having potential usage as a standalone automated cancer screening tool for screening population at risk in remote areas.

Scientific & Technical Excellence Award carries a Cash award of ` 1 Lakh, a Citation and a Medal. There were twenty eight award winners: Twenty from BARC and Two each from IGCAR and VECC, three from RRCAT and one from BRIT. Following were the award winners from RRCAT:



**Shri Pravin Fatnani**, SOH & Head, Accelerator Control Section, Accelerator Control & Beam Diagnostics Division received this award for his excellent contributions in the field of Controls and Instrumentation for Particle Accelerators Indus-1 and Indus-2 and associated systems. He has immensely contributed to various important activities leading to design, development, commissioning, reliable operation and maintenance of various subsystems of Indus Accelerators. His efforts have played a major role in achieving major milestones for the Accelerator Programme at RRCAT, Indore and successful round the clock operation of the national facility.

**Shri Avinash M Puntambekar**, SO/G & Head, SCRF Cavity Development Lab, Proton Linac & Superconducting Cavities Division received this award for his contributions in the field of development of 1.3 GHz superconducting cavity technology at RRCAT. The major contribution made by him is towards successful development of SCRF cavity manufacturing technology and demonstration of cavity performance at 1.8 K. The successful testing of 1.3 GHz single cell SCRF cavities have attained the rated performance of accelerating gradient (Eacc) of 37.5 MV/m with quality factor (Q) > 1.5E10 at 2 K & Eacc of 40 MV/m with Q > 1.5E10 at 1.8K during its testing at Fermilab, USA.



**Dr. Mangesh Balkrishna Borage**, SO/G Power Supplies and Industrial Accelerator Division was awarded with the Scientific and Technical Excellence Award (S&TEA) for the year 2012 for his contributions in the field of Resonant Imittance Converters (RICs), high frequency soft-switching power converters and their applications in various areas of particle accelerators and