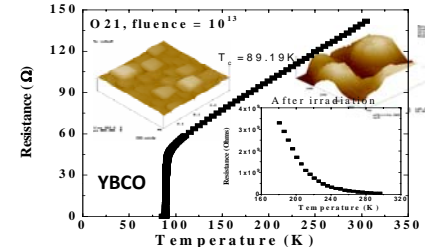


# CONSORTIUM RESEARCH LECTURE MODULE

## Superconductivity of elements in the periodic table: Past, Present and Future.

Aug 28-Sept 01, 2017

UGC DAE Consortium for Scientific Research,  
University Campus Khandwa Road, Indore- 452001, M.P.



DR+Mag insert at CSR

The Consortium organises advanced research lecture modules on challenging research topics in science of the modern materials. The Lecture Module comprises lectures delivered in a pedagogically interactive fashion by eminent scientists along with suitable laboratory exposure using the advanced laboratories set up at the Consortium. The lecture-module is open for participation for Research Scholars and young faculty members from the universities and the teaching institutions. There is limited support available for the travel (upto AC-3 Tier) and the local hospitality.

Those interested in attending the Research Lecture Module should write by email on [csrls@csr.res.in](mailto:csrls@csr.res.in) with a copy to [cd.indore@csr.res.in](mailto:cd.indore@csr.res.in) by July 20, 2017. Please include a copy of your brief bio-data with your research experience and names of two scientists (with the email address) who are either *your research guide* or *have taught you* or are *familiar with your work*. Please include a write up from your kind self giving answer to the question “Why you may be interested specifically in this lecture module and how it may help you in your science pursuit”.

Dr V Ganesan, Centre-Director, UGC DAE CSR, Indore Centre



Liquid Nitrogen Plant Linit 50



Liquid Helium Plant Linde L140



PPMS system VSM, HC, Rho with He3 insert



PPMS system with DR insert, Image Furnace



DR+D-Mag inserts at TIFR + Single crystal of Bi

**SPEAKERS: Prof. S. Ramakrishnan, TIFR, India, Dr. V. Ganesan, Er. P. Saravanan, Dr. A.Lakhani, Dr.R.Venkatesh & others, UGC-DAE CSR Indore**

**Abstract**-Superconductivity was discovered in mercury (Hg) by H. Kammerlingh Onnes in 1911. Its transition temperature is 4.2K in ambient pressure. Meissner effect forms an integral part of this phenomena. Over the century exotic superconductors have been discovered with fascinating and unconventional ground states, many of them are yet to be understood. Now the interest has turned back to the more fundamental aspects of superconductivity in metals itself. 31 Elements are found to be superconducting at ambient pressure while 22 at high pressures and 4 with modified conditions. The transition temperatures are so varied from Kelvin to sub-Kelvin ranges that demand special involvement of cryogenics coupled with various other non-trivial conditions like magnetic shielding. Recently Fe created a storm by superconducting at high pressure and very recently Bi carved its pitch in this domain as a curious case as it has been established to be superconducting at ambient pressure itself at 530 $\mu$ K with a critical field of 5.3 $\mu$ T (Science, 355, 52, 2017). Being a low carrier density system such an occurrence at ambient pressure was not an expected one. Such a scenario stimulates a lot of condensed matter interest, which will be discussed in the light theories available at our disposal.

