

# CRYSTAL GROWTH OF FUNCTIONAL AND EXOTIC MATERIALS(CGFEM'18)

Sponsored : Ministry of Human Resource Development - Global Initiative of Academic Networks (GIAN ) : 06-10, August 2018

Organized : Centre for High Pressure Research, School of Physics, Bharathidasan University, Tiruchirappalli, Tamil Nadu, India - 620 024  
www.bdu.ac.in



## About Tiruchirappalli

Tiruchirappalli is one of the oldest inhabited cities in Tamil Nadu, its earliest settlements dating back to the second millennium BC. The world's oldest surviving dam, the Kallanai, was built by Karikala Chola across the Kaveri River, about 24 kilometers from Trichy. The most famous landmark of this district is Rockfort Temple. This temple crowns a massive outcrop of rock, that soars 83 meters upwards, from the surrounding plains. It is reached by a step flight of 437 steps cut into the rock.

## About the University

Bharathidasan University was established on February 1982, and was named after the great revolutionary Tamil poet, Bharathidasan (1891-1968). The motto of the University "We will create a brave new world", has framed from Bharathidasan's poetic words, "Pudhiyathor Ulagam Seivom".

## The Centre

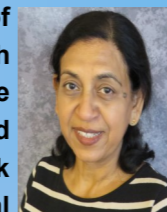
The centre is first of its kind in India for high pressure research equipped with high-tech facilities and it was inaugurated by Prof. T. Ramaswamy, Former Secretary, DST, New Delhi. The major focus of CHPR is to explore a wide research in condensed matter physics and to investigate various materials such as Manganites, High temperature and Fe-based superconductors, DMS materials, Organic conductors, MCE materials, Heavy fermions, Spin ladders, Dirac metals, Chalcogenides, and Topological insulators etc., under extreme conditions of High Pressure (50 GPa), Low Temperature (1.9 K) and High Magnetic Field (9 T).

## The Course

One of the most exciting avenues of future research is into discovering and investigating new classes of functional and exotic materials. To make any headway in the study of such materials, high quality single crystals are essential. This course will first introduce the advances made in several classes of interesting materials. The materials covered will be the wider family of frustrated magnet systems which exhibit novel magnetic ground states, such as quantum spin liquid and quantum spin ice, exotic superconductors including non-centrosymmetric superconductors and 2D transition metal dichalcogenides, the newly discovered Topological Insulators including Topological Kondo Insulators and Topological Crystalline Insulators and Dirac and Weyl semimetals. The course will address the various techniques employed for the production of high quality single crystals of the above materials as well as the growth and study of nanomaterials of some of the Topological materials. Techniques used to characterize the key properties of all of the functional and exotic materials will also be covered.

## Visiting Faculty

Prof. Geetha Balakrishnan is a Professor in the Department of Physics, University of Warwick, UK, where she oversees the crystal growth activities. She is a leading expert in the growth of single crystals of a wide variety of materials, covering superconductors, magnetic, and related materials by a variety of techniques, including a large programme of work using optical furnaces for the floating zone technique. Her principal research interests include the growth and study of conventional and exotic superconducting materials, high  $T_c$  materials, magnetic oxides, multiferroics, low-dimensional and frustrated magnets, borides and borocarbides, Topological Insulators, Kondo insulators and Skyrmonic materials. The synthesis and study of nanomaterials of the topological insulators and 2-D materials is a recent specialization, as is her work on magnetic skyrmionic materials.



## The Course Coordinator

Prof. S. Arumugam is a Coordinator of Centre for High Pressure Research (CHPR), School of Physics, Bharathidasan University, Tiruchirappalli. He has more than 25 years of experience in the field of high pressure low temperature physics and high pressure instrumentation such as Uniaxial Pressure Device for Electrical Resistivity & AC Susceptibility measurements, DC SQUID Vibrating Coil Magnetometer, Diamond Anvil Cell, Hydrostatic & Quasi Hydrostatic Pressure Cells and Modified Bridgman Anvil Pressure Cell. He had investigated various strongly correlated systems at extreme conditions. As a Scientist, he had visited many countries such as Swiss, Japan, Germany, Italy, France, South Korea, Sweden, USA, Taiwan, Singapore and Russia.

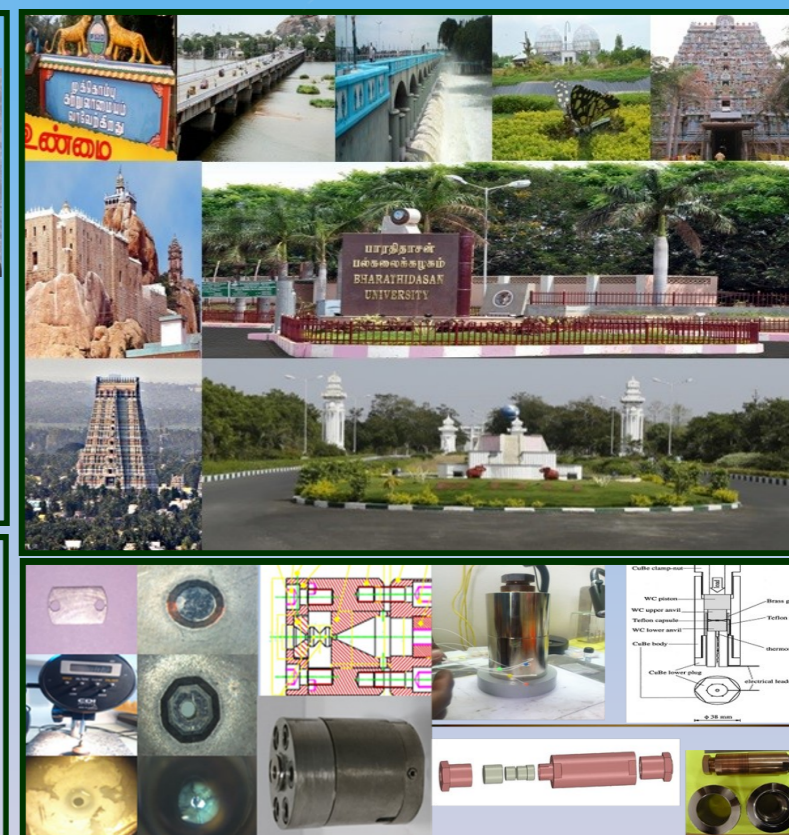


## Course Registration Fee

Participants from India:

Faculties / Scientists / Research Scholars	:	Rs. 3,000/-
Students (M.Sc., / M.Phil.,)	:	Rs. 2,000/-
Industry / Research Organizations	:	Rs. 5,000/-
SAARC Countries	:	US\$ 400
Non-SAARC Countries	:	US\$ 500
Registration Open	:	01/05/2018

Registration fee includes course materials and lunch only. Accommodation based on payment basis in the BDU guest house (Limited seats) and hotels.



## How to apply?

The workshop is aimed for maximum of 100 participants who may be Young researchers (M.Sc., M.Phil and Ph.D students) / Young Teaching Faculty at the college level any where from India and abroad. The fee will be accepted in the form of demand draft (DD) in favour of "The Course Coordinator, CHPR-GIAN programme, Bharathidasan University, Tiruchirappalli" payable at Tiruchirappalli. Spot registration will not be accepted. DD shall be sent to below address.

## Further details, Please contact Course Coordinator:

Prof. S. Arumugam, Coordinator,  
Centre for High Pressure Research (CHPR),  
School of Physics, Bharathidasan University,  
Tiruchirappalli-620 024 , Tamil Nadu, India  
Phone: +91 9500910310 / 9791675637 / 8508281375  
Email : sarumugam1963@yahoo.com / gianchpr@gmail.com

Last date of application receiving for registration from along with DD : 31/07/2018

Confirmation of registration will be communicated to the participants by email on 31/07/2018.