**Cordially Invites you to the**
**INSTITUTE COLLOQUIUM**
**(Chemical Sciences Division)**

**Professor Eluvathingal D. Jemmis**
**Department of Inorganic and Physical Chemistry**

# A Structural Chemistry for Boron:

Boranes, β-Boron, Metal Borides,
Boron-Fullerenes and nanotubes

**Date : Thursday, 12th November 2015**
**Venue :Faculty Hall, Main Building**
**Time : 4-00 p.m.**

**Prof Anurag Kumar, Director**
**will preside**

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**Abstract:**

The structural relationships involving tetravalent tetrahedral carbon, saturated hydrocarbons and diamond, as well as, planar tri-coordinate carbon, benzenoid aromatics and graphite, have stood the test of time. The extreme complexity of elemental boron and its compounds delayed a similar understanding in the chemistry of boron. Over the years we have brought in such an understanding, relating polyhedral boranes to β-rhombohedral boron based on a 3D equivalent of Hueckel 4n+2 π-electron Rule. When restricted to 0D, this new Rule, christened as the mno Rule, reduces to the Wade's n+1 skeletal electron pair Rule for polyhedral boranes. Several theoretical predictions based on these have been realized experimentally. The structural details of β-rhombohedral boron, such as the vacancies and extra occupancies, are now understood as the dictates of electronic structural requirements and not structural defects. These ideas led to a unified understanding of boranes, elemental boron and boron-rich solids and have become a part of textbooks and syllabus's in advanced inorganic chemistry courses in many countries. Just as the basic tenets of the structural chemistry of carbon has stood the test of time, and led to major developments in carbon, our ideas have begun to do so for boron. Studies based on these in the area of boron fullerenes and nanotubes are underway. The presentation will also give a brief overview of research in other areas in the group.

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**Tea : 5-00 p.m.**

**ALL ARE WELCOME**