
Colloquium

Designing Fullerene-like Boron Nanoclusters

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The non-planarity at the sp^2 hybridized trigonal carbon in C_{60} introduces strain. A simple strategy to force the surface carbons naturally prefer a pyramidal arrangement is available from the chemistry of pyramidal molecules. This also leads to the design of boron based fullerenes, using a better strategy than Yakobson et al. We also present the ways in which these clusters can be put together to form beta-rhombohedral boron using an electron counting rule, just as benzenes can be condensed in two dimensions to give graphite. These ideas lead to a unified understanding of polyhedral boranes, condensed polyhedral boranes, elemental boron and boron-rich solids and have become part of textbooks and syllabus's in advanced inorganic chemistry courses. Just as the basic tenets of the structural chemistry of carbon has stood the test of time, and led to major developments in carbon, the edifice of the structural chemistry expounded by us has begun to do so for the chemistry of boron and main group metal clusters.

Tuesday, Nov 18th 2014

11:30 AM (Tea/Coffee at 11:15 AM)

Seminar Hall, TCIS