Universität Leipzig
Wilhelm-Ostwald-Institut für
Physikalische und Theoretische Chemie

UNIVERSITÄT LEIPZIG

12.04.2018

Einladung zum Wilhelm-Ostwald-Institutskolloquium

Am **Montag, dem 09.07.2018, 16:15 Uhr**, spricht

Professor Si-Dian Li

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im Wislicenus-Hörsaal, Johannisallee 29, 04103 Leipzig

zum Thema:

Boron/Carbon Analogy: Planar Borophenes, Cage-Like Borospherenes, Boron Nanotubes, and Their Metal-Doped Heteronanostructures

Abstract

Boron-based nanomaterials have attracted considerable attention in recent years. We present herein the latest combined experimental and theoretical investigations on cage-like borospherenes B_n^q (q=n-40, n=36-42), metal-doped heteroborospherenes $Ni_n \in B_{40}$ (n=1-6), planar borophenes, metal-doped $Ni_2 \in B_{14}$ heteroborophenes, tubular molecular rotors B_2-Ta@B_{18}^-, B_3-Ta@B_{18}, and B_4-Ta@B_{18}^+, and the tubular to cage-like structural transition in metal-centered boron clusters at Ta@B_{22}^- which is the smallest axially chiral endohedral metalloborospherene with the record coordination number of CN=22. These nanostructures which are dominated with the double-chain chemistry of boron exhibit unique structural fluctuations due to the bonding fluctuations originated from the electron deficiency of the systems. Boron double chains（**BDCs**）appear to be equivalent to carbon single chains (**CSCs**) in these boronanostructures. Boron-based nanostructures possess properties complementary to carbon nanostructures and may find wide applications in catalysis, energy-storage, and electronics materials.

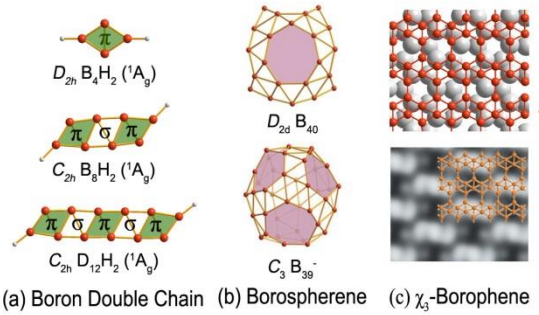

Fig.1 Borospherenes and borophenes composed

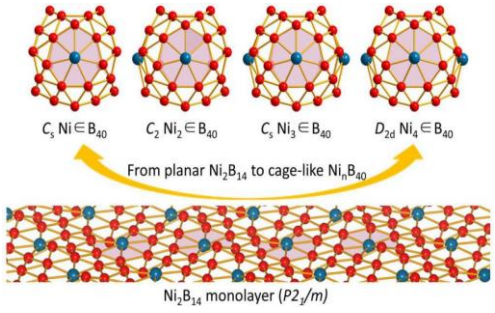

Fig.2 Heteroborospherenes and heteroborophenes of interwoven boron double chains

References

[1] H.J, Zhai, J. Li, S.D. Li, L. S. Wang et al, *Nat. Chem.*, 2014, **6**, 727–731. **|** [2] Q. Chen, H. J. Zhai, S. D. Li, L.S. Wang et al, *ACS Nano*, 2015, **9**, 754–760. **|** [3] H. Bai, H. J. Zhai, S. D. Li et al, *Angew. Chem. Int. Ed.*, 2014, **54,** 941–945. **|** [4] W.L. Li, J. Li. S. D, Li, L.S. Wang et al, *Chem. Comm.*, 2017, **53**, 1587-1590. **|** [5] H. R. Li, S. D. Li et al, *Sci. Reports*, 2017, **7**, 5701. **|** [6] H. R. Li, S. D. Li et al, *Phys. Chem. Chem. Phys.*, 2017, DOI: 10.1039/C7CP05179D.

Ab 15:30 Uhr findet ein gemeinsames Kaffeetrinken in Raum 410 (TA) statt.