

Einladung zum Wilhelm-Ostwald-Institutskolloquium

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

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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 boron nanostructures. Boron-based nanostructures possess properties complementary to carbon nanostructures and may find wide applications in catalysis, energy-storage, and electronics materials.

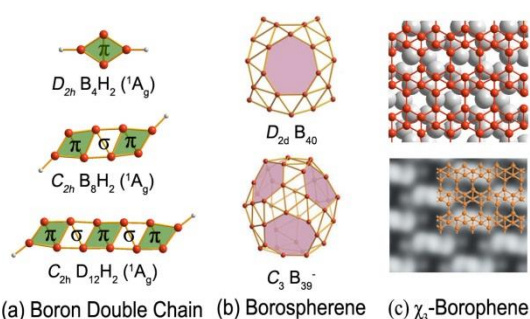


Fig.1 Borospherenes and borophenes composed

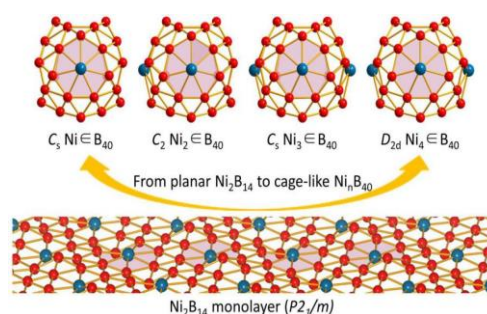


Fig.2 Heteroborospherenes and heteroborophenes of interwoven boron double chains

References

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