HETEROBOROXINES

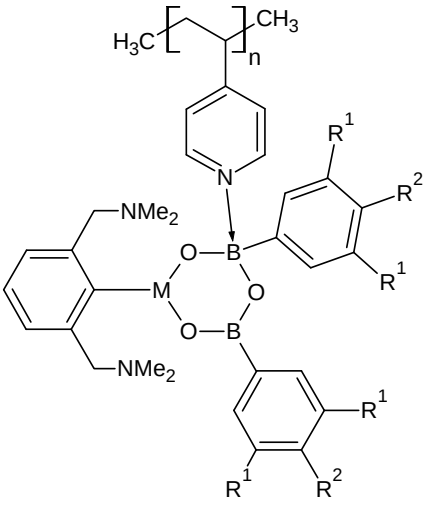
Roman Jambor, Miroslav Novák, Michael Srb, Jiří Schwarz

Faculty of chemical technology, University of Pardubice, Czech Republic

Heteroboroxines are a class of organic compounds that contain a six-membered ring consisting of three oxygen, two boron, and one other heteroatom, such as gallium, tin or another. These compounds are similar to borazines, except that heteroboroxines have an oxygen atom in place of the nitrogen atom.

Heteroboroxines are typically synthesized through the reaction of amides[1] or carbonates[2] with boronic acids. They have been studied for their potential applications in material science, such compounds able to coordinate the anions in batteries.

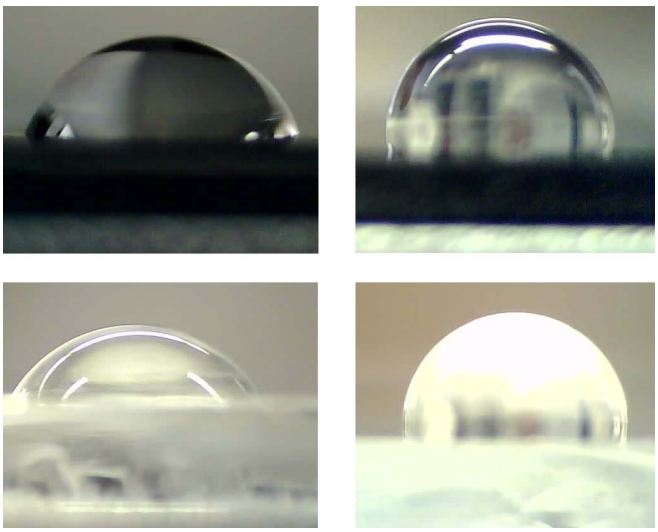
There were synthesized gallium- and tin-based heteroboroxines with *tert*-butyl and trifluoromethyl groups. These functional groups are capable of imparting hydrophobic character to the compounds. The synthesized compounds were then coordinated onto polyvinylpyridine or polyvinylpyridine-co-styrene to create a thin-layer substance. The resulting thin layers were spin-coated and characterized by measuring their contact angle, transparency to visible light, thickness, and roughness.



M = PhSn / Ga

R^1 = H / CF_3

R^2 = *t*Bu / CF_3 / H



Water droplet on silicon (up) or glass (down) spin-coated with poly(4-vinylpyridine) (left) and polyvinylpyridine with the heteroboroxine with M = PhSn; R^1 = CF_3; R^2 = H (right).

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[1] Y. Milasheuskaya, J. Schwarz, L. Dostál, Z. Růžičková, M. Bouška, Z. Olmrová Zmrhalová, T. Syrový, R. Jambor, Dalton Trans., **50**, 18164-18172 (2021)

[2] M. Kořenková, B. Mairychová, A. Růžička, R. Jambor, L. Dostál, Dalton Trans., **43**(19), 7096–7108 (2014)