Crystal Structures of the Iodized *closo*-Hexaborates

X-ray structure determinations have been performed on single crystals of *trans*-(*Ph<sub>4</sub>P)<sub>2</sub>[B<sub>6</sub>H<sub>4</sub>I<sub>2</sub>] (1) (triclinic, space group P1, \(a = 9.9680(12), b = 10.9690(11), c = 11.0470(14) \) Å, \(\alpha = 88.167(9), \beta = 80.466(12), \gamma = 68.839(11)\)°, \(Z = 1\)), *mer*-(*Ph<sub>4</sub>P)<sub>2</sub>[B<sub>6</sub>H<sub>3</sub>I<sub>3</sub>] · 2 CH<sub>2</sub>Cl<sub>2</sub> (2) (triclinic, space group P1, \(a = 11.8694(11), b = 15.1699(13), c = 17.051(2)\) Å, \(\alpha = 71.953(10), \beta = 69.331(8)\)°, \(Z = 2\)), *trans*-(*Ph<sub>4</sub>P)<sub>2</sub>[B<sub>6</sub>H<sub>2</sub>I<sub>4</sub>] · 2 CH<sub>3</sub>CN (3) (monoclinic, space group P2<sub>1</sub>/n, \(a = 14.9665(10), b = 7.6783(10), c = 23.385(3)\) Å, \(\beta = 95.78(9)\)°, \(Z = 2\)), and (*CH<sub>2</sub>Py<sub>2</sub>)[B<sub>6</sub>HI<sub>5</sub>] (4) (orthorhombic, space group Pnma, \(a = 13.660(2), b = 11.8711(13), c = 13.839(2)\) Å, \(Z = 4\)). The B<sub>6</sub> octahedra are compressed in the direction of the B-I bonds, resulting in shortened diagonal B···B distances with average values of the groups I-B···B-I = 2.37 and I-B···B-H = 2.43 Å as compared with H-B···B-H = 2.49 Å.

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