Liquid Crystalline Derivatives of *closo*-Boranes as Novel Materials for Display and Battery Applications

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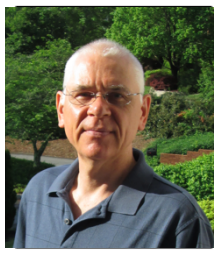

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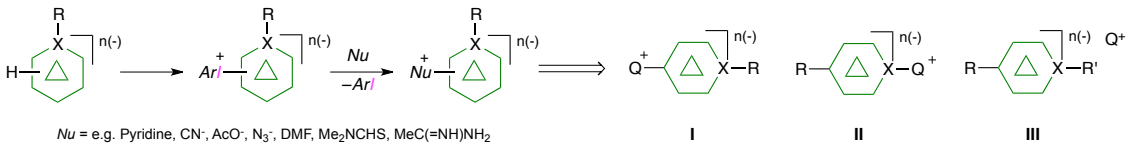
ABSTRACT

A recently discovered method for selective activation of the B–H bonds in *closo*-borates towards nucleophilic substitution through aryliodonium zwitterions[1] has opened up a convenient access to a large variety of polar and ionic self-organizing materials.[2] Such zwitterions are easily obtained from *closo*-borates and $ArI(OAc)_2$ and undergo facile reactions with nucleophiles according to the 10-I-3 or 9-I-2 mechanism. Appropriate derivatization of the resulting functionalized *closo*-borates leads to polar or ionic liquid crystals. The former are pyridinium, sulfonium, or quinuclidinium zwitterionic derivatives **I** and **II**, and are of interest as high dielectric anisotropy (Δε) additives to materials for LCD applications.[3] Ionic liquid crystals (ILC) are being developed as anisotropic ion conductors (electrolytes) for battery applications.



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REFERENCES

[1] Kaszyński, P.; Ringstrand, B. *Angew. Chem. Int. Ed*. **2015**, *54*, 6576.

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[3] For example: Pecyna, J.; Kaszyński, P.; Ringstrand, B.; Pociecha, D.; Pakhomov, S.; Douglass, A. G.; Young, V. G. Jr. *Inorg. Chem*. **2016**, 55, 4016. Pecyna, J.; Żurawiński, R.; Kaszyński P.; Pociecha, D.; Zagórski, P.; Pakhomov, S. *Eur. J. Inorg. Chem.*, **2016**, 2923.