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Synthesis and Characterization of Helicene-Based Imidazolium salts – Application in Molecular Functional Layers

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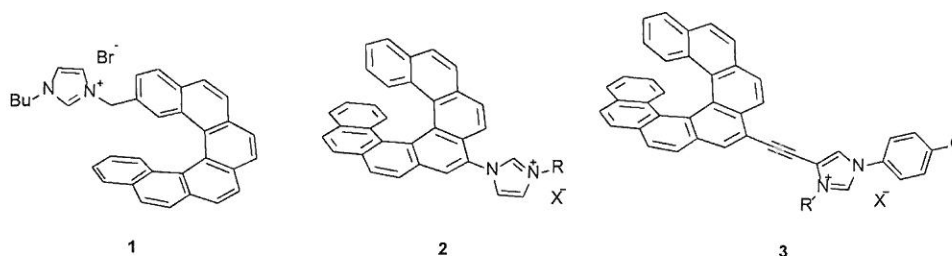
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Helicenes are functional molecules with a broad application potential in physical and chemical research and technology development [1]. One of the main fields of interest is the design of helicene functional derivatives and polymers, resulting in novel species with tailored physico-chemical properties leading to better stability, solubility, adsorbability and higher applicability in analytical chemistry, materials science and optoelectronics.

This work is focused on preparation of substituted imidazolium cation by [6]- and [7]helicene backbone in order to improve helicene properties for the surface immobilization and enhancing the solubility in polar solvents (Scheme 1).

These helicene molten salt were consequently characterized, using NMR and X-ray analysis, various optical spectrometric techniques and computational chemistry tools, and used for the construction of experimental electronic device. The conductivity and properties of spincoated 1 thin layers indicated its applicability for further organic electronic devices, especially for development of circularly polarized light detection and circularly polarized electroluminescence devices [2].



Scheme 1. Helicene imidazolium molten salts

References

- [1] M. Gingras, *Chem. Soc. Rev.*, **2013**, 42, 968.; M. Gingras, *Chem. Soc. Rev.*, **2013**, 42, 1051.; M. Gingras, G. Félix and R. Peresutti, *Chem. Soc. Rev.*, **2013**, 42, 1007.
[2] Y. Yang, R. C. Da Costa, M. J. Fuchter, A. J. Campbell, *Nature Photon.* **2013**, 7, 634.; Y. Yang, R. C. Da Costa, D. M. Smilgies, A. J. Campbell and M. J. Fuchter, *Adv. Mater.* **2013**, 25, 2624.

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