

Influence of the anion nature and alkyl substituents in the behavior of ionic liquids derived from phenylpyridines

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© 2017 Quaternary alkyl 2-phenylpyridinium and 2-(2,4-difluorophenyl)pyridinium amines with iodide, hexafluorophosphate and bis(trifluoromethylsulfonyl)imide anions have been fully characterized by ^1H NMR, FT-IR and MALDI mass spectroscopic methods and studied by quantum chemistry calculations. The compounds with bis(trifluoromethylsulfonyl)imide anion can be classified as ionic liquids, because they melt at room temperature. The quaternary amines with iodide and hexafluorophosphate anions are solid at 25 °C. The X-ray diffraction characterization of the 2-(2,4-difluorophenyl)-1-methylphenylpyridinium hexafluorophosphate and 1-ethyl-2-(2,4-difluorophenyl)phenylpyridinium hexafluorophosphate show an extensive series of C \cdots H \cdots F, C \cdots F \cdots F and P \cdots F \cdots F intermolecular interactions, which give rise to a supramolecular network. The relationship between the solid-state structures and the melting points is discussed by the evaluation of the thermal behavior based on experimental data from Differential