Title:	Ionic Discotic Liquid Crystals: Recent Advances and Applications
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Abstract:	Ionic liquids are currently attracting considerable attention as environmentally benign (green) solvents for various chemical reactions due to their interesting properties, such as high thermal stability, non-flammability, very low vapor pressure and reusability. They have great potential not only as ordered reaction media exhibiting high ionic conductivities, but also as functional materials for electrochemical devices, reaction solvents, catalysis and so on. However, in almost all cases, they have been used as functional isotropic liquids. If anisotropic structures are induced into ionic liquids their properties could be enhanced, ranging from molecular to macroscopic scale. In particular, introducing columnar structures formed by discotic liquid crystals (DLCs) is a promising approach to the formation of self-organized mono-domain in macroscopic scale that play a key role for the enhancement of the properties. Such hybrid materials (ionic DLCs) not only exhibit fluid ordered states but also function as anisotropic organic semiconductors that efficiently conduct ions. In all these cases, control of intermolecular interaction and formation of phase-segregated structures are key in the design and development of these materials. Whereas, intermolecular interactions, such as hydrogen bonding, ionic interactions, charge-transfer interactions, ion-dipole interactions and π-π interactions can be used for the construction of functional and ordered supramolecular structures, molecular mixtures consisting of partially immiscible components and block molecules having immiscible parts can form phase-segregated morphology from micro- to nanometer scale that induce novel function into these systems
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