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# Development of Electrochromic Ionic Liquid Crystals

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## PURPOSE OF THE ABSTRACT

Ionic liquid crystals (ILCs) which combine the properties of ionic liquids and liquid crystals seems particularly interesting for application in material science field [1]. The ILCs [C12-n-Pic][Br] have been used as starting materials in order to evaluate their chemical structure modifications on the mesomorphic behavior allowing the design of task-specific stimuli-responsive materials. In this context, one of the most promissory class of systems are called chromogenic materials that changes the color by the application of an external stimulus, such as electric potential, light, temperature, pressure or pH, among others. Our group already described photochromic and electrochromic ionic liquids containing metallic or organic responsive molecules with potential application in devices for molecular switches or smart windows [2,3]. Herein, it is presented stimuli-responsive ionic liquid crystals based on the combination of [C12-n-Pic] cations with vanadate anions. When combined with a cation or anion which exhibits liquid crystalline behavior, the ionic liquid crystal originated comprise the generic properties of both ionic liquids and liquid crystals (dynamic molecular order, anisotropic physical properties, self-assembling ability, among others) [1]. In this work, the synthesis and characterization of these electrochromic ionic liquid crystals, as well as the study of their electrochemical properties after application in devices, will be described. In parallel, the possibility to use ILCs based on bistriflimide anions (NTf2) as electrolytes for application in electrochromic devices using conventional probes have been explored.

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## FIGURES

FIGURE 1

FIGURE 2


## KEYWORDS

Ionic Liquid Crystals | Electrochromic Devices | Vanadium | Alternative Electrolytes


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