**Recent Advances In Electrochromic Plastic Devices**

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Nowadays, plastic electrochromic devices are one of the most promising kinds of devices within the electrochromic field. Research focus on these types of derivatives has attracted much attention due to the advantages stemmed from them including flexibility, light weightiness, adaptability to different surfaces, and ease of manufacturing. Previous work on electrochromic materials and manufacturing of all-plastic devices has been reported by CIDETEC [1]. Here, we report our recent advances in plastic electrochromic devices which involve the development of new electrochromic dispersions, polymer electrolytes and improvements in the optical contrast of full devices.

Commercially available PEDOT/PSS water dispersion has been widely used and investigated with relatively good results. However the presence of water and moisture is detrimental for opto-electronic devices and commercial applications. Therefore, a great deal of effort has been focused on the synthesis of polymeric organic dispersions with electrochromic properties in both visible and IR region. Such polymeric dispersions have been used to prepare devices focusing on commercial applications. For this purpose symmetrical symmetry devices, where the same polymeric dispersions is used as electrochromic layer and ion storage layer, has been choose due to its simplicity and ease of fabrication. Blends of ionic liquids based on imidazolium and polymers derived from such ionic liquids [2] have been used as electrolyte giving rise to fast electrochromic devices showing Δ%T: 43 % in the visible and Δ%T: 34.2% in the IR region. The devices developed from this research will be suitable for smart windows and variable optical attenuators in the infra-red.

[1] Mecerreyes, D.; Marcilla, R.; Ochoteco, E.; Grande, H.; Pomposo, JA.; Vergaz, R.; Sánchez Pena, JM.; Electrochimica Acta, **2004**, 49 (21): 3555.
[2] Marcilla, R.; Alcaide, F.; Sardon, H.; Pomposo, J.; Pozo-Gonzalo, C.; Mecerreyes, D.; Electrochemistry Comunications, **2006**, 8, 482-488.