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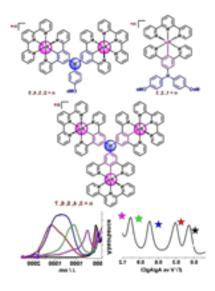
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Electro-active ruthenium-amine conjugated organometallic materials

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Electro-active and electrochromic materials have received a wide range of applications. The incorporation of a metal ion gives rise to new functions that are not present in common organic materials. However, the applications of electro-active organometallic materials are often hampered by their high redox potentials and difficulty in film formation. Recently, we have been interested in the designing and construction of electro-active systems with cyclometalated ruthenium and triarylamine as the charge-bearing sites. These materials show strong electronic coupling and multiple reversible redox processes in low positive potential window. After modified with vinyl or triphenyl units, these can be smoothly deposited onto ITO electrode surfaces by *in situ* electropolymerization. The obtained films exhibit multistate NIR electrochromism with long retention time, good contrast ratio, and low switching potential. The response is about a few seconds. Depending on the number of redox sites, 3-5 step redox switching were realized. These films have been used for the demonstrations of flip-flop or flip-flap-flop memory with electrochemical potentials as input signals and absorbance at different wavelengths as output signals. In addition to electropolymerized films, self-assembled monolayer films of these complexes were obtained and they are useful in molecular-scale NIR electrochromism and electrochemically-gated single molecular conductance.



Biography

Yu-Wu Zhong obtained his PhD in the year 2004 from the Shanghai Institute of Organic Chemistry, Chinese Academy of Sciences (CAS) under the supervision of Professor Guo-Qiang Lin. From 2004 to 2006, he was a Post-doctoral Researcher at the University of Tokyo with Professor Eiichi Nakamura. From 2006 to 2009, he has worked with Professor Hector D Abruna at Cornell University as a Post-doctoral Researcher. His research interests focuses on electro-active and photo functional organic materials and transition-metal complexes. He has published more than 110 peer-reviewed papers till date. He is currently an Associate Editor of RSC Advances and Editorial Board Member of Scientific Reports and Science China Chemistry.

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