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An attractor-repulsor molecular design prinicple for the exploration of supramolecular Steric Hindrance (SSH) effects

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In order to overcome the defect in organic/polymer wide bandgap semiconducors, bulky groups were introduced into molecualar backbone. Our initial motivation is to design the effective bulky groups with concise route such as spirofluorenexanthene (SFX) in order to suppress the pi-pi stacking interactions among backbone. However, we found one phenomenon that supramolecular interaction occur at bulky groups. This observation inspired us to explore the cooperative effect between bulky groups with repulsion and supramolecualr groups with attraction by molecular design. We found a series of supramolecular steric hindrance (SSH) effects on OLEDs, the two-dimensional nanocrystals, beta phase transition in polyfluorenes. The established attractor-repulsor theory (ART) is a new chemical stragety to design supramolecular bulk for organic advanced materials and biomedicine.

Biography

Linghai Xie is a Professor of Organic/Polymer Materials Chemistry at Nanjing University of Posts and Telecommunications (NUPT). He obtained his PhD from Fudan University in June 2006. After this, he joined Nanjing University of Posts and Telecommunications (NUPT) and become a leader of the center for molecular systms & organic devices (CMSOD). He won the "NSFC Award" for Excellent Young Scholar in 2013. His research activities focus on Molecular Installing Technology (MIT), Attractor-Repulsor Theory (ART), Polygrid Wide-Bandgap Semiconductors, Organic Electrets for Memories and Memristors. He has published more than 130 papers in reputed journals and has been cited more than 1700 times.

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