

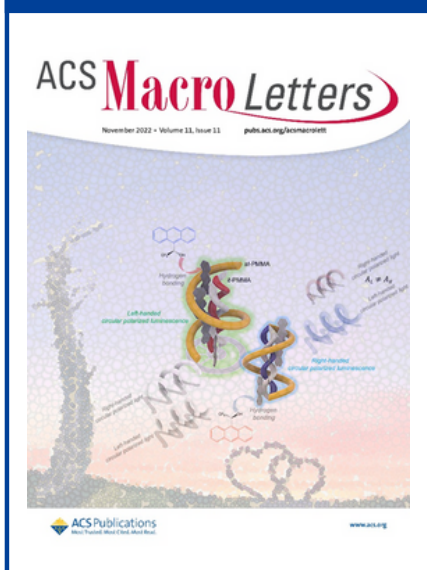
Circular Polarization Luminescence of Groove Anchor Driving Optically Active Poly (methyl methacrylate) Stereocomplexes

Ming-Chia Li*, Masanao Sato, Fa-Chung Chen, Wei-Tsung Chuang, Tomoyasu Hirai*, Atsushi Takahara*, and Rong-Ming Ho*

文章說明

陽明交通大學 李明家 教授研究團隊研究論文榮登國際期刊 Macro Letters (ACS) 2022 年 11 月份封面。該研究論文提出了一種製備具有高不對稱值的誘導圓偏振發光 (induced circularly polarized luminescence, iCPL) 薄膜樣品的簡便方法。研究中主要利用聚甲基丙烯酸甲酯 (poly (methyl methacrylate, PMMA) 和手性發色 (2,2,2-trifluoro-1- (9-anthryl) ethanol, TFAE) 分子之間相互作用力，建構出具有動態螺旋構形的複合物，並使用日本分光 (JASCO) 所生產之一系列光學設備，包含傅立葉轉換式紅外光譜儀 (FTIR-6600)、圓二色光譜儀 (J-1700)、振動圓二色光譜儀 (VFT-4000) 與圓偏振螢光光譜儀 (CPL-300)，來獲取穩定與高靈敏之光學活性信息，作為手性分子三級結構鑑定之重要與關鍵依據。

論文封面



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Article : ACS Macro Lett. 2022, 11, 1306–1311

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Abstract

This paper presents a facile method for fabricating a thin-film sample with a high asymmetry value of induced circularly polarized luminescence (iCPL) ($|g_{lum}| = 2.0 \times 10^{-3}$). The method involves mixing stereoregular poly(methyl methacrylate) (PMMA) and chiral chromophore (2,2,2-trifluoro-1-(9-anthryl)ethanol (TFAE) to form a complex with a dynamic helical conformation of poly(methyl methacrylate) (PMMA) associated with TFAE via hydrogen bonding. This dynamic helical conformation can be stabilized by the stereocomplexation of a pair of stereoregular PMMA, where the TFAE is sandwiched between a double-helix isotactic PMMA and single-helix syndiotactic PMMA, resulting in a preferential one-handed helical conformation with a high value of iCPL from self-assembly.

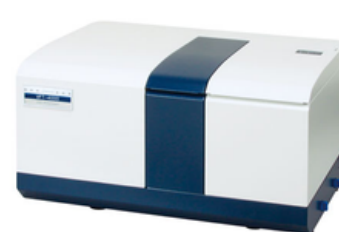
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