

Effects of alkyl chains on the electroluminescent properties of yellow and green light-emitting cationic iridium complexes

수네쉬 CD, 허지윤, 배은혜, 최영선†

부산대학교

(choe@pusan.ac.kr†)

A series of cationic iridium complexes (1–6) were synthesized using alkylated imidazole-based ancillary ligands and the photophysical and electrochemical properties of these complexes were subsequently evaluated. Light-emitting electrochemical cells (LECs) were fabricated from these complexes and the effects of the alkyl chain length on the electroluminescent properties of the devices were investigated. The LECs based on these complexes resulted in yellow emission (complex 1, 3, and 5) and green emission (complex 2, 4, and 6) with Commission Internationale de L’Eclairage (CIE) coordinates of (0.49, 0.50) and (0.33, 0.59), respectively. Our results indicate that the luminance and efficiency of the LECs can consistently be enhanced by increasing the alkyl chain length of the iridium complexes as a result of suppressed intermolecular interaction and self-quenching. Subsequently, a high luminance of 7309 cd m<sup>-2</sup> and current efficiency of 3.85 cd A<sup>-1</sup> were achieved for the LECs based on complex 5.