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Keywords 1,3,4-oxadiazole; polyphosphazene; organic light-emitting device

Properties of polyphosphazenes can be adjusted by carefully choosing the side organic groups connected to each phosphorus atom. The electron-withdrawing character of the 1,3,4-oxadiazole ring in derivatives facilitates electron injecting and transport. Cyclotriphosphazene and polyphosphazene containing 1,3,4-oxadiazole unit were synthesized and characterized with NMR and FTIR in this report. The molecular weight of oxadiazole-containing polyphosphazene from gel permeation chromatography (GPC) was $M_w = 1.03 \times 10^4$, $M_n = 7.91 \times 10^3$, $D = 1.30$. Ultraviolet absorption peak of Oxadiazole-containing cyclotriphosphazene is at 286 nm and photoluminescent peak at 356 nm (excited at 286 nm). The optical properties of 1,3,4-oxadiazole-containing polyphosphazene are closely similar with that of oxadiazole-containing cyclotriphosphazene. From the differential scanning calorimetry (DSC) curve, the melting point of Oxadiazole-containing cyclotriphosphazene was 243.3 and the T_g of polymer was 85°C. From the TGA curve oxadiazole-containing polyphosphazene was very stable before 200°C. The cycloxytriphosphaznen show high thermal stability, which means that this product was a suitable material for organic light-emitting device (OLED).

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