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Synthesis, characterization and photoluminescence study of aromatic polyamides and poly(1,3,4-oxadiazole-amide)s nanoparticles containing pendent acetoxyaramides groups

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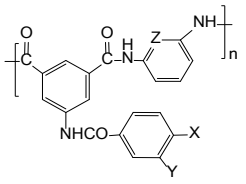
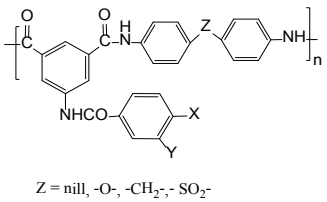
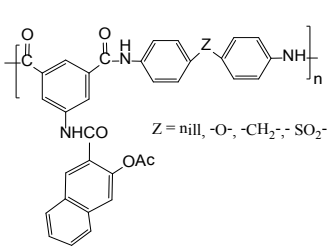
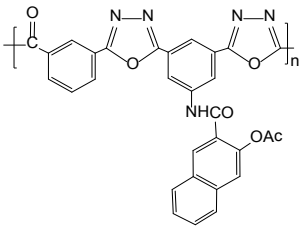
Light-emitting phenomena are a characteristic of luminescence materials. Among these materials light-emitting aromatic polyamides that produce electroluminescence or photo- luminescence phenomena, upon exposure to an electric current or due to absorption of photons causing re-radiation. The film formation properties and outstanding mechanical properties of aramids make these polymers suitable for the production of organic light emitting diodes (OLED). Herein, we describe the preparation of novel aromatic polyamides and poly (1,3,4-oxadiazole-amide)s nanoparticles with pendant structures comprised of m- and p-acetoxybenzamide groups or 2-acetoxynaphthamide, where the acetoxyaramide groups act as signalling units due to their fluorescent and chromogenic characteristics. These model compounds were also used to study the influence of the orientation of the acetoxy group on the thermal stability and photoluminescence behaviour of the polymers. From OLED efficiency point of view, the investigated polymeric series of the materials will serve as good examples of how the molecular structure influences optical and electronic performance. A high polymer molecular weight will guarantee an adequate conjugation length and enhance interchain interactions, yielding an increased hole mobility through strengthened intramolecular charge transport properties and intermolecular hopping.









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