SYNTHESIS, CHARACTERIZATION AND PHOTOLUMINESCENCE STUDY OF NEW AROMATIC POLYMERIC NANOPARTICLES CONTAINING PENDENT SUBSTITUTED ARAMIDES

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ABSTRACT

Substituted aromatic polyamides are a characteristic of luminescence materials that produce electroluminescence or photoluminescence 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).

In this work, we describe the preparation of novel aromatic polyamides nanoparticles with pendant structures comprised of substituted benzamides or naphthamides, where the groups act as signalling units due to their fluorescent and chromogenic characteristics. These model compounds were also used to study the influence of the structure modification 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 whole mobility through strengthened intramolecular charge transport properties and intermolecular hopping.

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