Abstract

The rapid technological advances in organic electronics are driving the search for improved solutions for synthesizing new organic materials to meet the ever-increasing modern demands. Small-molecule organic compounds have pioneered applications in innovative electronic devices, such as light-emitting diodes (OLEDs), as opposed to previously used inorganic compounds. The use of organic materials provides a high possibility of synthetic modifications of many organic motifs. This makes it possible to quickly direct the properties of new materials with well-defined functions.

The aim of this work of the doctoral dissertation was to synthesize new nitrogen derivatives with suitable properties, i.e. the ability to luminescence and produce thin films of solids. The hydrazone core of the molecule was structurally modified using numerous organic motifs using cross-coupling reactions. In order to improve the efficiency of these reactions, the synthesis of ligands/catalysts being aziridine derivatives was planned. In addition, the synthesis of aziridine ligands was extended, checking their catalytic properties in other test reactions as well. The hydrazide hydrazones finally obtained were tested for use in organic electronics, such as as active layers in organic light-emitting diodes. To this end, their aggregation-induced emission (ang, AIE) properties were confirmed as well as their film-forming properties were studied.