

Synthesis and optical characteristics of chiral bis-naphthalimide derivatives

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Conventional emitters give off un-polarized light. Meanwhile polarized or circularly polarized light is nowadays highly demanded for their versatile applications [1,2,3], including the development of 3D displays and organic light-emitting devices (OLED) [4]. Conventionally, polarized light (PL) and circularly polarized light (CPL) are obtained using linear polarizer and quarter-wave plate. Unfortunately, this technique suffers from an important brightness loss (up to 50%) and an increase complexity of the device. Therefore, development of circularly polarized organic light-emitting diodes (**CPOLEDs**) in which CPL is intrinsically radiated from a chiral emitter appears necessary. Thus, in recent years, there has been a steady increase in the number of studies regarding the search for new CPL active materials. However, since electrical excitation results in the formation of 25% bright singlet and 75% dark triplet exciton, it is capital to develop CPL emitters able to collect the triplet energy. Therefore, we decided to focus on the conception of molecules displaying both CPL and TADF (thermally Activated Delayed Fluorescence) properties for the growth of a new generation of OLED.

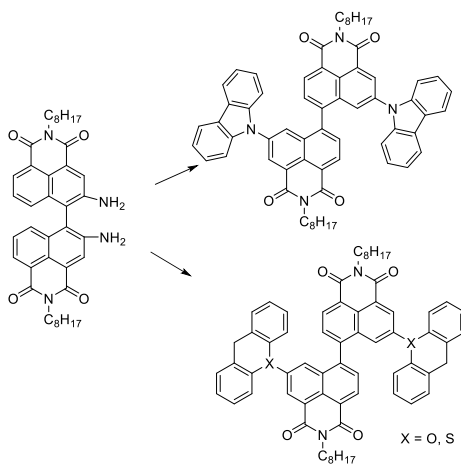


Figure 1: A. Structure of the 1,1'-Bi(2-naphthylamine-4,5-dicarboximide) and of the first emitters.

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