BROMOQUINOXALINE DERIVATIVES AS ORGANIC ROOM TEMPERATURE PHOSPHORESCENCE; SYNTHESIS AND INVESTIGATION

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Organic luminophores with room temperature phosphorescence (RTP) or thermally induced delayed fluorescence are attractive alternatives to organic metal complexes due to their low cost, abundance, environmental friendliness, flexibility in synthesis, and high stability. [1]. sluggish intersystem crossover (ISC) can be a result of poor spin-orbit coupling [2]. As a result, achieving long-lived emission from triplet states is a difficulty. To enable efficient long-term emission, molecular design techniques that enhance ISC should be used. Organic compounds may be chemically changed by introducing heavy halogen atoms, and have significant spin-orbit coupling characteristics, which accelerate both the rate from T1 to S0 and the rate of ISC from S1 to Tn [3]. In this study, we developed a variety of simple brominated quinoxaline derivatives that were tested as RTP luminogens. By using a one-step imidization reaction [4], bromine substituted quinoxaline derivatives were synthesized from benzil or 4,4'-dibromobenzil and 3,6-dibromobenzene-1,2-diamine or benzene-1,2-diamine, respectively. The synthesised compounds showed RTP properties.Compounds with bromo atoms at the C-5 and C-8 quinoxaline positions exhibited the highest oxygen sensitivity.

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