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New donor-acceptor-donor molecules based on quinoline acceptor unit with Schiff base bridge: synthesis and characterization

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Abstract

Three solution-processable small organic molecules bearing quinoline as electron-accepting moiety were synthesized via condensation reaction of novel 6-amino-2-(2,2'-bithiophen-5-yl)-4-phenylquinoline with 2,2'-bithiophene-5-carboxaldehyde, 9-ethyl-9H-carbazole-3-carbaldehyde and 9-phenanthrenecarboxaldehyde. The presence of alternating electron-donating and accepting units results in a donor-acceptor-donor architecture of these molecular systems. Thermal, photophysical, and electrochemical properties of these small molecules were examined and the experimental results were supported by the density functional theory calculations. The obtained molecular systems exhibited high thermal stability with decomposition temperatures (5% weight loss) exceeding 330°C in nitrogen atmosphere. It was

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