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Photophysical Characterization of DMOP, DOOP, and PDO After Irradiation[1] SARAH ROZINEK, JORGE PALOS-CHÁVEZ, LORENZO BRANCALEON, Physics, UTSA, MARK A. PENICK, MATHEW P.D. MAHINDARATNE, GEORGE R. NEGRETE, Chemistry, UTSA — The photophysical properties of perylene and its derivatives are remarkably useful for organic photovoltaic systems including organic solar cell photoacceptors, molecular sensors, and fluorescent labels for analytical applications. A series of uncharacterized novel 3,9-dialkyloxy- and diacyloxyperylenes perylene analogues (3,9-dimethoxyperylene, DMOP, 3,9-bis(1-octyloxy)perylene, DOOP, and novel 3,9-bis(1-octanoyloxy) perylene, PDO) were developed. This study examined the stability of these perylene derivatives within a range of solvents after exposure to 405nm irradiation at various intensities and durations. Absorption spectroscopy, fluorescence spectroscopy, and fluorescence lifetime decay using time-correlated single photon counting were preformed. Preliminary results indicate that DMOP, DOOP, and PDO are highly stable in pyridine, slightly less stable in tetrahydrofuran (THF), more interesting in chloroform, and least stable in carbon tetrachloride (CCl4). In the right solvent they may be successfully incorporated into organic solar cells and other photovoltaic systems.

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