NEW FLUORENE MOLECULES WITH EFFICIENT TWO-PHOTON ABSORPTION FOR MULTIDISCIPLINARY NONLINEAR OPTICAL APPLICATIONS

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Linear photophysical and two-photon absorption (2PA) properties of new sulfur-containing fluorene compounds, 2,7-bis(4-(phenylthio)styryl)-9,9-didecyl-9H-fluorene (**1**) and 2,7-bis(4-(phenylsulfonyl)styryl)-9,9-didecyl-9H-fluorene (**2**), are investigated with respect to a broad variety of nonlinear optical applications, including multiphoton fluorescence and lifetime bioimaging. The high fluorescence quantum yield and the effect of excited state symmetry breaking are observed. The 2PA spectra were measured over a broad spectral range 480–880 nm by the two-photon fluorescence and *Z*-scan techniques. The 2PA cross sections (up to 2000 GM) are calculated using a numerical fitting algorithm taking the excited state absorption and stimulated emission processes into account.