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Entangled Photon Fluorescence with Organic Conjugated Dendrimers LESLIE UPTON, THEODORE GOODSON, University of Michigan — The use of entangled photons for spectroscopy is a novel technique with several potential applications in entangled two-photon excited fluorescence microscopy, quantum imaging and remote sensing. Classical TPA depends quadratically on the input photon flux, whereas, non-classical entangled two-photon absorption (ETPA) has a linear dependence on input flux rate. The total TPA rate measured using an entangled photon source is given by the summation of the ETPA rate and the random TPA rate. This work focuses on the entangled two-photon absorption cross-section and the entangled two-photon fluorescence efficiency of a G1 Dendrimer. From these results, it is shown that the entangled two-photon excited fluorescence of the G1 Dendrimer has a linear dependence at low input photon fluxes. This result has great impact on spectroscopy where the need for small numbers of photons is great, such as microscopy and sensing.

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