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Inverse Spin Hall Voltage in Organic Semiconductors with Tunable Spin-Orbit Coupling DALI SUN, KIPP VAN SCHOOTEN, HANS MALISSA, MARZIEH KAVAND, CHUANG ZHANG, CHRISTOPH BOEHME, Z. VALY VARDENY, Department of Physics & Astronomy, University of Utah, Salt Lake City, UT, 84112, USA — Spin-current in organic semiconductors that are generated via the process of 'spin-pumping' from FM substrates subjected to resonant microwave absorption has attracted recently great interest, since this scheme circumvents the impedance mismatch that exists in the "spin injection" technique between the organic semiconductors and FM injector. Because of the weak spin-orbit coupling (SOC) in most organic semiconductors (OSECs), the obtained inverse spin Hall effect (ISHE) in these materials is very subtle. In this work we measured ISHE in a variety of OSECs having tunable SOC ranging from strong SOC (pi-conjugated polymers that contain intrachain Pt atoms) to weak SOC polymers (such as DOO-PPV). We found that the ISHE response in these compounds increases with the SOC, in spite of the decrease in the spin diffusion length.

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