

Abstract Submitted  
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**Magnetically modulated electroluminescence from hybrid organic/inorganic light-emitting diodes based on electron donor-acceptor exciplex blends.**<sup>1</sup> ZHIYONG PANG, SANGITA BANIYA, CHUANG ZHANG, DALI SUN, Z. VALY VARDENY, University of Utah — We report room temperature magnetically modulated electroluminescence from a hybrid organic/inorganic light-emitting diode (h-OLED), in which an inorganic magnetic tunnel junction (MTJ) with large room temperature magnetoresistance is coupled to an N,N,N',N'-Tetrakis(4-methoxyphenyl)benzidine (MeO-TPD): tris-[3-(3-pyridyl)mesityl]borane (3TPYMB) [D-A] based OLED that shows thermally activated delayed luminescence. The exciplex-based OLED provides two spin-mixing channels: upper energy channel of polaron pairs and lower energy channel of exciplexes. In operation, the large resistance mismatch between the MTJ and OLED components is suppressed due to the non-linear I-V characteristic of the OLED. This leads to enhanced giant magneto-electroluminescence (MEL) at room temperature. We measured MEL of ~75% at ambient conditions.

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