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Spin injection in cobalt and copper phthalocyanines<sup>1</sup> DAVID CIUDAD, Massachusetts Institute of Technology, MARCO GOBBI, CIC nanoGUNE Consolider, DARIO A. ARENA, National Synchrotron Light Source, Brookhaven National Lab, JAGADEESH S. MOODERA, Massachusetts Institute of Technology — An organic light emitting diode (OLED) is a heterojunction comprising two different organic semiconductors (OS): one for hole and another one for electron transport. Electrons and holes recombine at the interface between them. Depending on their total spin the recombination may (singlet state) or may not (triplet state) produce visible light. The efficiency of OLEDs could be doubled by injecting a spin-polarized current (Spin-OLED).<sup>2</sup> One obstacle to attain a spin-OLED is the lack of studies of spin diffusion lengths  $(\lambda_s)$  and injection efficiencies on hole-transport OS. We investigate spin injection in phthalocyanines (Pcs). The Pcs are ideal candidates to reach the above goal because: 1) of their high hole mobility; 2) Cu-Pc in particular is currently used in OLEDs; 3) their high thermal and chemical stability; 4) these molecules contain a single metal atom making them a unique system to study its effect on the spin injection. To determine  $\lambda_s$  we investigate multilayer structures having transition metal/ Cu-Pc or Co-Pc interfaces including magnetic tunnel junctions with OS as barriers. Further characterization of these interfaces has been performed by soft X-Ray measurements at the NSLS-BNL facility.

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