

Abstract Submitted
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Low temperature MRFM probe development and initial characterization of organic solar cells MARK MONTI, DIMITRI ALEXSON, DORAN SMITH, U.S. Army Research Laboratory — We report on the construction of a Magnetic Resonance Force Microscope (MRFM) for organic solar cell characterization. Organic bulk-heterojunction solar cells (OSCs) consist of a blend of two organic semiconductors- an electron donating polymer and an electron accepting fullerene. The efficiency of blended OSCs is highly dependent on the phase separation between the donor and acceptor materials. MRFM offers a unique toolset to study OSCs with the potential to gain insight into the morphology of the buried heterostructure on an actual device. The MRFM probe will operate at 4K and up to 9T using force gradient detection of magnetic resonance via an ultra sensitive single crystal silicon cantilever. We plan on performing NMR spectroscopy on OSCs using a shuttling technique whereby the sample is shuttled far from the gradient magnetic particle during the encoding portion of the NMR RF pulses. We will present on the status of the probe development and on our initial experiments on organic solar cells.

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