

Abstract Submitted  
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**A Scanning, All-Fiber Sagnac Interferometer for High Resolution Magneto-Optic Measurements at 820 nm** ALEXANDER FRIED, AHARON KAPITULNIK, MARTIN FEJER, Stanford University — The Sagnac Interferometer, has historically been used for detecting non-reciprocal phenomena, such as rotation. Here we demonstrate a method by which the technique is used as a high resolution method for measuring the Magneto-Optical Polar Kerr effect—a direct indicator of magnetism. Previous designs have incorporated free-space components which are bulky and difficult to align. We improve upon this technique by using strictly fiber-optic coupled optical components and demonstrate operation at a new wavelength, 820 nm, with which we can achieve better than 1  $\mu$ rad resolution. Mounting the system on a piezo-electric scanner allows us to acquire diffraction limited images with 1.5  $\mu$ m spatial resolution. We also provide extensive discussion on the details and of the SI's construction.

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