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Linear and nonlinear properties in soft glass optical fibers for device applications LEILY KIANI, Physics and Chemistry, School of Natural Sciences, University of California, Merced, TILANKA MUNASINGHE, WEN QI ZHANG, SHAHRAAM AFSHAR, Institute for Photonics and Advanced Sensing (IPAS), School of Chemistry and Physics, University of Adelaide, Australia, JAY SHARPING, Physics and Chemistry, School of Natural Sciences, University of California, Merced, APPLIED PHOTONICS GROUP AND INSTITUTE FOR PHOTONICS AND ADVANCED SENSING (IPAS) COLLABORATION — Optical fiber technology is predominantly based on silica glass fibers. Non-silica soft glass fibers exhibit substantially different optical properties such as higher refractive index, larger nonlinear coefficient and structural fabrication flexibility. We aim to exploit these novel properties for device applications such as sensing and light generation. We report measurement of linear dispersion and nonlinear coefficient in the range of 1.5 μm in two custom designed soft glass microstructure optical fibers. The fibers are composed of SF57 (Schott) and Bismuth-doped silica (Asahi Glass Co.) respectively with Hexagonal Wagonwheel microstructure design. These fibers are designed to allow phase matching of nonlinear optical processes near 1.6μm. Our measurements indicate nonlinear coefficients 1000 times that of standard silica fiber. Transverse modes in these fibers are difficult to separate leading to a complicated dispersion results. Next steps include observation of parametric generation and Brillouin gain.

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