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**High Finesse Microcavity for Gas Sensing** BENJAMIN PETRAK, KUMARASIRI KONTHASINGHE, ANDREAS MULLER, University of South Florida — We report our progress in using optical Fabry-Perot microcavities for multiatomic gas sensing. The microcavities consist of one micromirror at a fiber tip and another micromirror on a planar silica substrate, each with a diameter near 50 microns. The micromirrors were fabricated by an improved CO2 laser ablation process that uses feedback from the light emitted during ablation to control the mirror dimensions. A cavity finesse in excess of 50 000 was obtained in the near-infrared. Our goal is to make use of the Purcell effect of cavity quantum electrodynamics to obtain an enhancement of Raman scattering when a double resonance condition is achieved.

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