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Paper: Ultrasensitive UV-tunable grating in all-solid photonic bandgap fibers

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Abstracts:

We study the shift of a long period grating's resonance wavelength with UV induced refractive index changes in an all-solid photonic bandgap fiber. A long period grating is mechanically imprinted in an all-solid photonic bandgap fiber with Germanium doped silica high-index rods in a lower-index silica background. The index of the high-index rods is modified through UV exposure, and we observe that the long period grating's resonance shifts with the bandgaps. With a sensitivity of 21,000 nanometers per refractive index unit and a 8.8 nm resonance width changes of refractive index of 3×10^{-6} are in principle detectable