ELECTRONIC SUPPLEMENTARY INFORMATION

Whispering Gallery Mode Emission from Dye-Doped Polymer Fiber Cross-sections Fabricated by Near-Field Electrospinning

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Figure S1: A plot of data and table of values which were obtained from Scott et al\textsuperscript{1}, and used to calculate the refractive indices of ethanol-water solutions used for sensing experiments.
Figure S2: Histograms of 0.0035 gR6G/gPVA fiber size electrospun using stage speeds of 10.0 mm/s, 5.0 mm/s, 1.0 mm/s, and 0.5 mm/s.
Figure S3: AFM image of the surface of a dye-doped PVA fiber electrospun with a stage speed of 0.5 mm s\(^{-1}\) and a R6G/PVA mass ratio of 0.0035. The measured root-mean-squared roughness was 2.4 nm.
Figure S4: Optical microscopy images illustrating the range and degree of diameter variation observed in dye-doped, electrospun PVA fibers on a glass substrate. Background depicts the scribed trench over which the fibers were suspended. Scale bar: 100 μm.

Figure S5: a) Spectra taken at 0.8 μm increments along the length of a 4.2 μm diameter fiber. b) A schematic representation of spectral measurements at three different axial positions along the length of the fiber.
Figure S6: Histogram of as-spun and crosslinked R6G-PVA fiber size electrospun using a stage speed of 0.5 mm/s. A small increase in fiber diameter was caused by glutaraldehyde crosslinking treatment.
Figure S7: Optical images of crosslinked R6G-PVA fibers a) before and b) after immersion in water for 24 h. The fibers were water stable. Scale bar: 200 μm.
Figure S8: a) Representative fluorescence spectrum of a crosslinked R6G-PVA fiber in water. The spectrum was taken with a 50x long working distance objective under 532 nm CW illumination, using conditions similar to ethanol-water chemical sensing. The shutter was closed between measurements. b) The peak wavelength as a function of measurement time for mode near 580 nm. WGM resonance wavelength remains stable over time.
Figure S9: a) Peak emission wavelength as a function of ethanol concentration for the same 15.9 µm fiber shown in Figure 7. b) Plot of sensitivity versus wavelength for each resonance peak. Sensor sensitivity increases for longer wavelength.