Abstract Submitted
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Photoconductive response of ammonium nitrate crystals support on silica nanospring mats[1] LYNDON BASTATAS, Oklahoma State University, ELENA ECHEVERRIA-MORA, AARON AUSTIN , DAVID MCILROY, Physics Department, Oklahoma State University — Nanostructures such as nanowires and nanosprings have high surface-to-volume ratio. They offer a wider active area for molecules to interact, which is favorable for chemical sensing. Ammonium nitrate exhibits photoconductivity and sensitivity to humidity. However, to precisely deposit the photoconductive film on the region of interest without providing scaffold for the film faces delamination issues. We intend to investigate the utility of silica-based nanosprings as a sensor when coated with ammonium nitrate. Preliminary studies are being conducted that take advantage of the hydrophilicity of nanosprings after plasma treatment. The current methodology for growing ammonium nitrate crystals involves soaking hydrophilic nanospring mats grown on a glass in a solution of ammonium nitrate and DI water, followed by air drying. The nanosprings act as the scaffold for nucleation of ammonium nitrate crystals and adhesion to the surface. Electrical characterization in air and at room temperature reveals sensitivity of the nanospring support ammonium nitrate crystals upon exposure to humidity and strong photoconductive response upon illumination for wavelengths less than or equal to 532 nm.

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Lyndon Bastatas
Oklahoma State University

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