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**Ceramic electrospun nanofibers as selective emitters for thermophotovoltaic energy conversion** WORAPHON KATAPHINAN, VIVEK TOMER, GEORGE CHASE, EDWARD EVANS, REX RAMSIER, DANIEL SMITH, DARRELL RENEKER, MAURICE MORTON INSTITUTE OF POLYMER SCIENCE COLLABORATION, DEPARTMENT OF PHYSICS COLLABORATION, DEPARTMENT OF CHEMICAL ENGINEERING COLLABORATION, DEPARTMENT OF CHEMISTRY COLLABORATION, THE UNIVERSITY OF AKRON, AKRON OH 44325-3909 TEAM — Ceramic nanofibers were produced by electrospinning and characterized with electron microscopy, X-ray diffraction, FTIR, and X-ray photoelectron spectroscopy. Rare earth compounds were incorporated in the ceramic nanofibers in order to selectively modify the optical properties of the ceramic electrospun nanofibers. Titania electrospun fibers were studied. X-ray diffraction showed the titania nanofiber annealed at 773 K had the anatase crystal structure, and annealing at 1173 K produced the rutile crystal structure. In order to modify the optical properties, erbia was incorporated into Titania nanofibers. Temperature-dependent emission spectra showed that the erbia-containing nanofibers emit selectively in the near-infrared when convectively heated by hot gas. The electrical power generated by a GaSb photodetector was measured as a function of temperature. Such ceramic nanofibers can be used in thermophotovoltaic energy conversion technology to generate electrical energy from relatively low temperature heat sources, which are presently wasted.

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