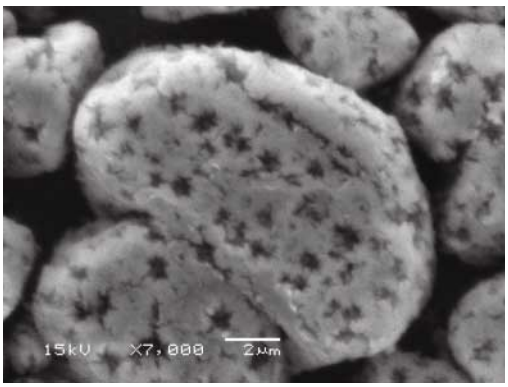
Sonochemical Fabrication of Porous Zinc Oxide Film

Given its potential as semiconductor and optically active materials, ZnO is an attractive material both from scientific and technological points of view. A new form of ZnO, porous zinc oxide films were prepared by a sonochemical deposition of $Zn(OH)_2$ and the following low-temperature annealing. The deposition process is based on a destabilization of zinc hydroxide/ammine complex by power ultrasonic irradiation in an aqueous solution. The porous ZnO films affords promising industrial applications such as sensors and catalysts.



SEM image of the porous ZnO film

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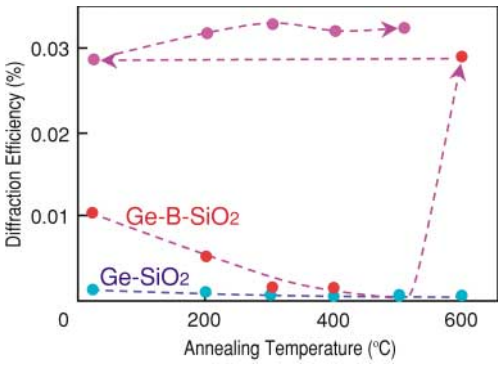
Waveguide Filter with Thermally Stabilized Photo-Induced Bragg Grating

Bragg gratings were printed in Ge-B-SiO2 thin glass films by KrF excimer laser irradiation through a phase mask. Although the gratings were almost erased upon annealing at temperatures lower than 500°C, a grating with much high diffraction efficiency was formed after annealing at 600°C. The diffraction efficiency of the grating was approximately one order of magnitude greater than that of the Ge-SiO_2 film. The diffraction efficiency of the grating was unchanged upon repeated heating between room temperature and 600°C. Thermally stable waveguide wavelength filter could be obtained by using the thermally stabilized photo-induced Bragg grating.



Changes in diffraction efficiencies of the fabricated gratings

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