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High Temperature Ferromagnetic and UV-Optic Properties of Co-Doped ZnO Nanoclusters Prepared under Different O2 Atmospheres[1]
JIJI ANTONY, SWETA PENDYALA, XIANG-BAI CHEN , LEAH BERGMAN, University of Idaho, DAVID E. MCCREADY , MARK ENGLEHARD , Pacific Northwest National Laboratory, AMIT SHARMA , DANIEL MEYER, YOU QIANG, University of Idaho, PACIFIC NORTHWEST NATIONAL LABORATORY COLLABORATION — Co-doped ZnO nanocluster films are prepared at room temperature under different oxygen concentrations by, our novel nanocluster system, based on a technique that is a combination of high pressure sputtering and aggregation. Magnetic properties of the cluster films are measured by SQUID magnetometer. We measured hysteresis loops of these samples at various temperatures and with the increase of temperature the coercivity, remanence and saturation magnetization decreased. The UV-PL intensity of the samples prepared in high O_2 atmosphere is stronger, with low FWHM compared to the samples prepared in low O_2 atmosphere. The field cooling (FC) and zero-field cooling (ZFC) data are taken and analyzed. XRD pattern of these samples are quite similar to the bulk ZnO where as XPS data showed the presence of Co in the samples.

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