Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

Raman scattering properties of SnO_x[1] RALF MEYER, Theoretical Physics, University of Duisburg-Essen, 47048 Duisburg, Germany, CEDRIK MEIER, AXEL LORKE, Experimental Physics, University of Duisburg-Essen, 47048 Duisburg, Germany — Oxidic semiconductors like ZnO_x and SnO_x have recently attracted a lot of attention as possible optical materials for novel technological applications. Results from Raman scattering experiments at $SnO_{1.5}$ nanoparticles are presented which show strong differences compared to the Raman spectra of bulk SnO_2. In order to understand these differences, ab-initio calculations of the Raman scattering properties of bulk SnO_2 and $SnO_{1.5}$ have been performed. Raman spectra derived from these calculations compare qualitatively well with the experimental findings. From this, it is concluded that the differences in the experiments are an effect of the bulk materials. An analysis of the nature of the calculated Raman active vibrational modes makes it possible to draw further conclusions on the reasons behind the differences between the stochiometric SnO_2 and the understochimetric $SnO_{1.5}$.

[1]Supported by the Deutsche Forschungsgemeinschaft (SFB 445)

Ralf Meyer
Theoretical Physics, University of Duisburg-Essen, 47048 Duisburg, Germany

Date submitted: 27 Nov 2007 Electronic form version 1.4