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Temperature dependent behavior of epsilon-Fe₂O₃ embedded in SiO₂ thin films by micro-Raman and XAS. JESUS LOPEZ-SANCHEZ, OSCAR RODRIGUEZ DE LA FUENTE, NOEMI CARMONA, LUCAS PEREZ, Univ Complutense Madrid, AIDA SERRANO, Sp-line ESRF, MANEL ABUIN, DESY FS-NL Nanolaboratory, ALVARO MUÑOZ NOVAL, Hiroshima Univ, JUAN DE LA FIGUERA, JOSE F. MARCO, IQFR - CSIC — Epsilon-Fe₂O₃ nanoparticles show very attractive properties, among them, a giant coercive field (around 2T at room temperature), magnetoresistance or millimeter wave ferromagnetic resonance (FMR). [1] We have recently discovered that the epsilon-phase is present in sol-gel films from 350C and remains stable up to 900C. [2] This is an important advance regarding its growth since the typical temperature range used in the literature for obtaining this elusive phase is comprised from 900C to 1100C. In the present work, we analyse the evolution of Raman and XAS spectra as a function of the temperature and results are compared for each synthetic path. Nevertheless, other phenomena are also studied, such as the structural transition from epsilon-phase to alpha-phase varying the output laser power, or the behavior when the material undergoes a Neel transition at 500 K [3]. References [1] L. Machala et al., Chem. Mater., 23, 2011, 3255 [2] J. Lopez-Sanchez et al., Chem. Mater. 28, 2016, 511 [3] J. Lopez-Sanchez et al., RSC Adv., 2016,6, 46380

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