	Experiment title: Comparative study of high-dielectric constant ultra-thin films for microelectronics	**Experiment number**: SI 1009
Beamline: BM 08	**Date of experiment**: from: 3/11/04 to: 9/11/04	**Date of report**: 26/2/08 (updated)
Shifts: 15	**Local contact(s)**: F. D'Acapito	*Received at ESRF:*

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Report:

The results of this experiment have been published in

M. Malvestuto, G. Scarel, C. Wiemer, M. Fanciulli, F. D'Acapito and F. Boscherini, "X-ray absorption spectroscopy study of Yb_2O_3 and Lu_2O_3 thin films deposited on Si(100) by Atomic Layer Deposition", Nucl. Instrum. Meth. B **246**, 90 (2006).

Abstract:

Using x-ray absorption spectroscopy we have investigated the local structure of Yb_2O_3 and Lu_2O_3 thin films deposited on Si(100) by means of atomic layer deposition. These two oxides, as well as those of the other rare earth elements, are considered among the high dielectric constant materials candidates to substitute SiO_2 in ultra-scaled CMOS devices. We find that the films maintain the overall bixbyite structure of the bulk oxides, but exhibit significant distortions of the local structure depending on thickness and thermal treatment.