

Abstract Submitted  
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**Growth and properties of epitaxial  $\text{Fe}_{2-x}\text{Ti}_x\text{O}_3$  thin films**

MANUEL BIBES, Institut d Electronique Fondamentale, CNRS, HERVE NDIL-IMABAKA, ELENA POPOVA, NIELS KELLER, YVES DUMONT — While  $\text{Fe}_2\text{O}_3$  and  $\text{FeTiO}_3$  are both antiferromagnetic insulators with Néel temperatures of 950K and 60K, respectively,  $\text{Fe}_{2-x}\text{Ti}_x\text{O}_3$  ( $0.2 < x < 0.8$ ) solid solutions are semiconducting and exhibit a finite magnetization with critical temperatures close to or above room temperature. As such,  $\text{Fe}_{2-x}\text{Ti}_x\text{O}_3$  samples are intrinsic ferromagnetic semiconductors with potential for spintronics. We have grown films of  $\text{FeTiO}_3$  and  $\text{Fe}_{1.5}\text{Ti}_{0.5}\text{O}_3$  by pulsed laser deposition on  $c\text{-Al}_2\text{O}_3$  substrates in a wide range of deposition pressures. The films are epitaxial and their transport properties depend critically on the growth pressure. We will present the results of the optimization of their structural, magnetic and magneto-optical properties.

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