

Title: Structural and Microanalytical Studies of CrO₂ Thin Films on c-Sapphire by High Resolution Electron Microscopy Methods

Author(s): Ortiz, M. I.¹; Sousa, P. M.^{2,3}; Ballesteros, C.¹; **Silvestre, A. J.**^{4,5}; Cohen, L. F.⁶; Conde, O.^{2,3}

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Abstract: Chromium dioxide (CrO₂) has been extensively used in the magnetic recording industry. However, it is its ferromagnetic half-metallic nature that has more recently attracted much attention, primarily for the development of spintronic devices. CrO₂ is the only stoichiometric binary oxide theoretically predicted to be fully spin polarized at the Fermi level. It presents a Curie temperature of ~ 396 K, i.e. well above room temperature, and a magnetic moment of 2 mB per formula unit. However an antiferromagnetic native insulating layer of Cr₂O₃ is always present on the CrO₂ surface which enhances the CrO₂ magnetoresistance and might be used as a barrier in magnetic tunnel junctions.

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Reprint Address: Ortiz, MI (reprint author), Univ Carlos III Madrid, EPS, Dept Fis, Madrid 28911, Spain.

Addresses:

1. Univ Carlos III Madrid, EPS, Dept Fis, Madrid 28911, Spain
2. Univ Lisbon, Dept Fis, P-1749016 Lisbon, Portugal
3. ICEMS, P-1749016 Lisbon, Portugal
- 4. Inst Super Engn Lisboa, P-1959007 Lisbon, Portugal**
5. ICEMS, P-1959007 Lisbon, Portugal
6. Univ London Imperial Coll Sci Technol & Med, Dept Phys, Blackett Lab, London SW7 2AZ, England

E-mail Address: oconde@fc.ul.pt

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