

**Title:** KrF pulsed laser deposition of chromium oxide thin films from Cr8O21 targets

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**Source:** Applied Physics A-Materials Science & Processing

**Volume:** 79 **Issue:** 4-6 **Pages:** 1409-1411

**DOI:** 10.1007/s00339-004-2795-7 **Published:** Sep 2004

**Abstract:** Chromium oxides, CrxOy, are of great interest due to the wide variety of their technological applications. Among them, CrO2 has been extensively investigated in recent years because it is an attractive compound for use in spintronic heterostructures. However, its synthesis at low temperatures has been a difficult task due to the metastable nature of this oxide. This is indeed essential to ensure interface quality and the ability to coat thermal-sensitive materials such as those envisaged in spintronic devices. Pulsed Laser Deposition (PLD) is a technique that has the potential to meet the requirements stated above. In this work, we describe our efforts to grow chromium oxide thin films by PLD from Cr8O21 targets, using a KrF excimer laser. The as-deposited films were investigated by X-ray diffraction and Rutherford backscattering spectrometry. Structural and chemical composition studies showed that the films consist of a mixture of amorphous chromium oxides exhibiting different stoichiometries depending on the processing parameters, where nanocrystals of mainly Cr2O3 are dispersed. The analyses do not exclude the possibility of co-deposition of Cr2O3 and a low fraction of CrO2.

**Document Type:** Article

**Language:** English

**KeyWords Plus:** Chemical-Vapor-Deposition; Dioxide CrO2 Films; Magnetic-Properties; Spin Polarization; Point-Contact; Magnetoresistance; Ferromagnet

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**Publisher:** Springer

**Address Publisher:** 233 Spring Street, New York, NY 10013 USA

**IDS Number:** 839EL

**ISSN:** 0947-8396

**Citation:** Popovici N, Parames M L, Da Silva R C, Monnereau O, Sousa P M, Silvestre A J, Conde O. KrF pulsed laser deposition of chromium oxide thin films from Cr8O21 targets. Applied Physics A-Materials Science & Processing. 2004: 79 (4-6), 1409-1411.