Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

Synthesis and Characterization of CrAlC Thin Films JUAN ROCHE, JEFFREY HETTINGER, SAMUEL LOFLAND , Rowan University, TED SCABAROZI, Drexel University — We have synthesized and characterized Cr2AlC thin films grown on substrates Al2O3, MgO and seed layers of VC, and TiC at room temperature up to 850°C. Texture films were successfully grown above 550°C while Raman spectroscopy shows vibrations down to 500°C. Films below 500°C down to room temperature show texturing upon annealing at 750°C. The films were prepared using RF magnetron sputtering from elemental targets. Electrical transport shows metallic behavior of the films down to 10 K. EDS was used to verify chemistry from which the MA ratios were found that a slight deviation still allowed formation of the MAX phase. X-ray diffraction shows that when the chemistry is off it results in secondary phases of Cr26C6 and Cr2Al. Atomic Force Microscopy (AFM) shows smoother films at lower temperatures and rough at higher temperatures with a surface roughness $>$ 20 nm. Friction test results will be presented.

Juan Roche
Rowan University

Date submitted: 14 Dec 2007 Electronic form version 1.4