

## Deposition and Dielectric Characterization of Highly Oriented V<sub>2</sub>O<sub>5</sub> Thin Films

L. Jacques, S. Shetty, F.J. Vega, Y. Liu, B. Aronson, T. Beechem, and S. Trolier-McKinstry

The possibility of ferroelectricity in orthorhombic V<sub>2</sub>O<sub>5</sub> thin films was investigated. Films were deposited via either a chemical solution deposition (CSD) route or by RF magnetron sputtering. Highly (001) oriented V<sub>2</sub>O<sub>5</sub> films were achieved with both deposition routes at temperatures as low as 300°C. No evidence for ferroelectricity was observed, even in films which had been doped to provide local nuclei for polarization reversal. Loss originated from mid-gap trap states stemming from oxygen vacancies that were observed with photoluminescence, supplemented by piezoresponse force microscopy measurements. These trap states may have helped mimic ferroelectricity in previous reports on V<sub>2</sub>O<sub>5</sub>.