

**NOVEL COMPOUNDS FOR USE AS TiO<sub>2</sub>  
PRECURSORS IN THIN FILM  
DEPOSITION BY LIQUID INJECTION  
MOCVD.**

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**ABSTRACT**

**Five new titanium dioxide thin film precursors designed to be less air sensitive than the standard precursor titanium tetra-isopropoxide have been synthesized via reaction between titanium tetra(isopropoxide) and various dimethylamino alcohols. These compounds are titanium tetra(dimethylaminopropan-1-ol) (Ti(DMAP<sup>1</sup>)<sub>4</sub>), titanium tetra(dimethylaminopropan-2-ol) (Ti(DMAP<sup>2</sup>)<sub>4</sub>), titanium isopropoxide tri(dimethylaminoethanol) (Ti(OPr<sup>i</sup>)(DMAE)<sub>3</sub>), titanium tri-isopropoxide dimethylaminopropan-1-ol (Ti(OPr<sup>i</sup>)<sub>3</sub>(DMAP<sup>1</sup>)) and titanium tri-isopropoxide dimethylaminopropan-2-ol (Ti(OPr<sup>i</sup>)<sub>3</sub>(DMAP<sup>2</sup>)). The new compounds have been characterized by <sup>1</sup>H and <sup>13</sup>C NMR spectroscopy, infrared spectroscopy and thermogravimetric analysis (TGA). The precursors were tested for their ability to produce TiO<sub>2</sub> films on un-doped silicon substrates by direct liquid injection metal organic chemical vapour deposition (DLI-MOCVD). Simple in-air stability testing was also performed. The films produced have been characterized using X-ray diffraction (XRD) and Rutherford back scattering (RBS) and the results of these studies will be reported.**