

# **In situ superconducting MgB<sub>2</sub> films grown by co-evaporation technique**

## **Authors**

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## **Abstract**

Superconducting thin films of MgB<sub>2</sub> were grown *in situ* by co-evaporation of magnesium and boron on MgO (111), SiC (0001) and Al<sub>2</sub>O<sub>3</sub> (0001) substrates at ~300 °C. The films showed transitions to the superconducting state in the temperature range of 33–37 K. The widths of the superconducting transitions were less than 1 K. The films exhibited growth in the *c*-axis and absence of other phases. Optimization of the growth parameters enabled films with smooth surface morphology and root-mean-square (RMS) roughness of 2 nm to be grown. The low RMS roughness value indicates that the technique can be used to grow MgB<sub>2</sub> films useful for junctions and multilayer devices. (© 2005 WILEY-VCH Verlag GmbH & Co. KGaA, Weinheim)