MOCVD of KNbO$_3$ Thin Films

I. Korsakov, M. Romanov, I. Bolshakov (Moscow State University), S. Zhgoon (Moscow Power Engineering Institute), G. Wahl (Technical University of Braunschweig), and A. Kaul (Moscow State University)

Thin films of KNbO3 were deposited by MOCVD in a vertical cold wall stagnation flow reactor. Two types of single sources were used – a powder flash evaporator and a liquid injection source. Alcoholates and beta-diketonates were compared as volatile MOCVD precursors. The problem of alkali metal precursors is discussed. X-ray diffraction (theta-2theta, phi- and chi-scans) of films deposited on single crystalline substrates of MgO (100), SrTiO3(100), LaAlO3(100) proved a heteroepitaxial growth of the „cube-on-cube“-type. Potassium niobate being a weakly orthorombic distorted perovskite with a and c nearly equal b√2 may form blocks of different
orientations which were studied by XRD. Influence of deposition conditions on film composition, microstructure and crystal quality was investigated.