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Crystallographic Study of Cubic Phase AlN Thin Films Heteroepitaxially Grown on Sapphire (0001) Substrates by Pulsed Laser Deposition KAZUSHI SUMITANI, RYOTA OHTANI, Kyushu Synchrotron Light Research Center, TOMOHIRO YOSHIDA, SATOSHI MOHRI, TSUYOSHI YOSHITAKE, Department of Applied Science for Electronics and Materials, Kyushu University — Cubic phase AlN films were successfully grown on sapphire (0001) substrates by pulsed laser deposition. The crystallographic nature of the films was evaluated by X-ray diffraction using synchrotron radiation at the SAGA Light Source. It was found from the measurements that c-AlN with a lattice constant of 7.90 ± 0.06 Å was heteroepitaxially grown on the substrate with a relationship of AlN(111)[1-21]/Al_2O_3(0001)[11-20]. Due to the deposition of high-energy ions and non-equilibrium condition in the PLD growth, heteroepitaxial growth of c-AlN is realized.

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