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Growth of high-quality InN thin films on InGaN buffer layer by plasma-assisted molecular beam epitaxy CHEN-CHI YANG, IKAI LO, CHENG-HUNG SHIH, CHIA-HSUAN HU, YING-CHIEH WANG, YU-CHIAO LIN, CHENG-DA TASI, SHUO-TING YOU, Department of Physics, Center for Nanoscience and Nanotechnology, National Sun Yat-Sen University, Kaohsiung 80424, Taiwan, R. O. C. — Four samples were grown on 2 inch ***c***-plane (0001) sapphire substrates with 4μm-thick GaN template. The InN thin films were grown on InGaN buffer layer by low-temperature plasma-assisted molecular beam epitaxy (PAMBE) system. These samples were grown under a varied temperature of InGaN buffer layers: 500°C, 540°C, 570°C, and 600°C. The structure properties of these samples were analyzed by X-ray diffraction (XRD). The interference fringes of InN grown on the sample 1 (the growth temperature of InGaN buffer layer at 500°C) exhibit prominent oscillations, which indicates that the sample has a high quality and layer by layer epitaxial structure. The surface morphology and microstructure of samples were investigated by scanning electron microscopy (SEM), atomic force microscopy (AFM), and transmission electron microscopy (TEM). We confirmed the smooth surface and high quality crystalline for the sample.

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