

## OPTICAL, STRUCTURAL AND MAGNETIC PROPERTIES OF (Ga,Mn)As and (Ga,Fe)As LT-MBE LAYERS

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The GaAs-based ferromagnetic semiconductor alloys doped with Mn, Fe, In or Bi emerged as potential candidates for novel microelectronic and spintronic applications.

In this work, the structural, optical and magnetic properties of (Ga,Mn)As and (Ga,Fe)As epi-layers grown by low-temperature (230°C) molecular beam epitaxy on semi-insulating (001) GaAs substrates were studied using high resolution X-ray diffraction (HR-XRD), Transmission electron microscopy (TEM) as well as photo-reflectance (PR) and  $\mu$ -Raman spectroscopies. The magnetic properties of the epi-layers were studied using the superconducting quantum interference device (SQUID) magnetometry. The in-situ UV Angle Resolved Photoemission Spectroscopy (ARPES) was used for the band structure analysis of the epitaxial layers.

High-quality of the epi-layers was confirmed by HR-XRD and TEM observation. Based on the PR measurements, the band gap ( $E_0$ ) optical transitions were determined. The  $\mu$ -Raman spectroscopy confirmed  $p$ -type character of some films by the observation of the Coupled Plasmon-LO Phonon Mode (CPPM). Promised magnetic properties of the epi-layers offer their future successful application.

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*Keywords:* ferromagnetic semiconductor compound, X-ray diffractometry, (Ga,Mn)As epitaxial layers.

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