

**Experiment title:**

Real time epitaxial growth of alpha Hg₁₂
on CdTe substrates.

Experiment**number:**

HS-98

Beamline:

ID19

Date of Experiment:

from: 04-Ott-96 to: 05-Ott-96

Date of Report:

13/10/96

Shifts:

3

Local contact(s):

Espeso José

Received at ESRF:

23/10/96

Names and affiliations of applicants (*indicates experimentalists):

Ernesto DIÉGUEZ*

Carlos MARÍN*

Nikolai SOCHINSKII*

Universidad Autonoma de Madrid

Departamento Fisica de Materials

Laboratorio de Crecimiento de Cristales.

E-28049 Madrid

SPAIN

Report:

There have been studied by a synchrotrons white beam topography 5 groups of samples representing different areas of research activities at Lab. Crystal Growth at Univ. Autonoma of Madrid. These samples and obtained characterization results are as follow:

1. Hg_{1-x}Cd_xI₂/CdTe heterostructures formed by vapor phase epitaxy of Hg_{1-x}Cd_xI₂ 20-30 μm thick layers on CdTe substrates (single-crystalline wafers).

There have been revealed the growth mechanism and single crystalline nature of the layers.

2. HgI₂ platelets grown by physical vapor transport method. The crystalline quality of the platelets grown at different technological regimes has been estimate in respect to the quality of Hg_{1-x}Cd_xI₂ epitaxial layers.
3. CdTe wafers. The structural quality of CdTe substrates used for the Hg_{1-x}Cd_xI₂ epitaxy has been compared with that of commercial samples of CdTe, and a preliminary correlation between the quality of the layers and the substrates has been established.
4. CdTe/sapphire, CdTe/GaAs and CdTe/CdTe heterostructures obtained by metalorganic vapor phase epitaxy (MOVPE). There the crystalline quality of CdTe layers has been respected to the different substrates (sapphire, GaAs and CdTe wafers) to reveal its importance on final CdTe layers.
5. Hg_{1-x}Cd_xTe/sapphire heterostructures grown by selective area vapor epitaxy. The single crystalline nature of the Hg_{1-x}Cd_xTe 50 x 200 μm² multielement arrays has been confirmed and the X-ray topograms of the arrays have been recorded and compared with Hg_{1-x}Cd_xTe/sapphire heterostructures grown by conventional epitaxy when the layer covers the whole substrate area.