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IN-DEPTH STUDY OF MORPHOLOGICAL DEFECTS OF MBE-GROWN CdTe ON Si

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For the first time, the origin and nature of morphological defects typically found in CdTe and CdSeTe layers deposited by molecular beam epitaxy on Si were investigated in detail*. Focused ion beam (FIB) milling, secondary electron microscopy (SEM) and transmission electron microscopy (TEM) were used to analyze the morphology, structure and composition of the defects.

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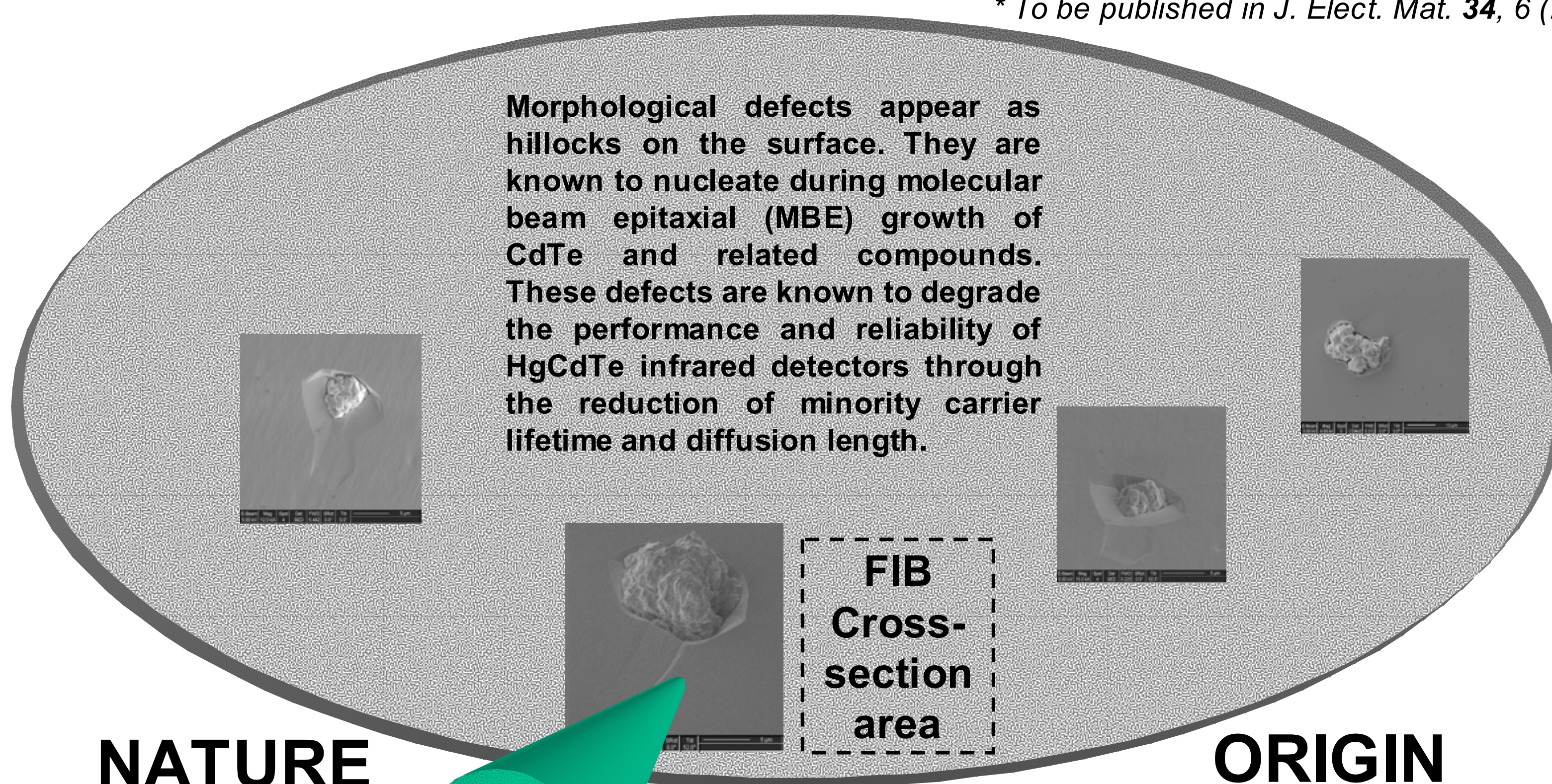
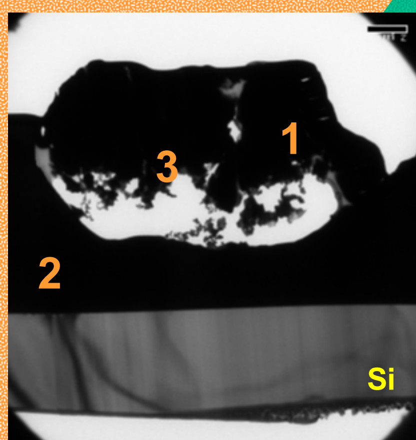
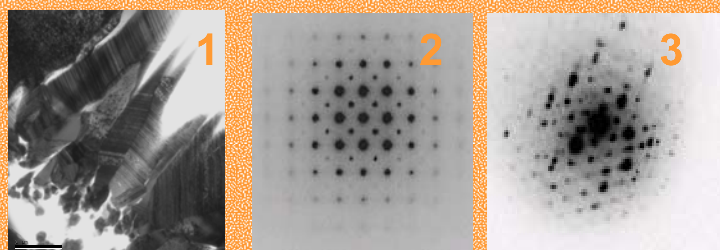


NATURE

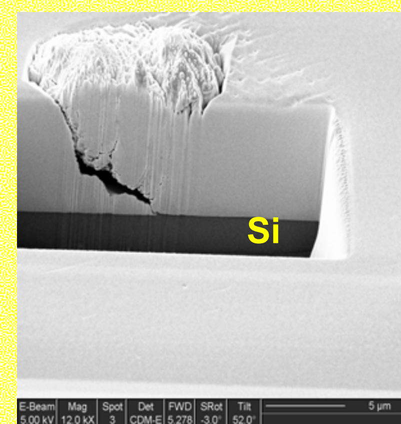


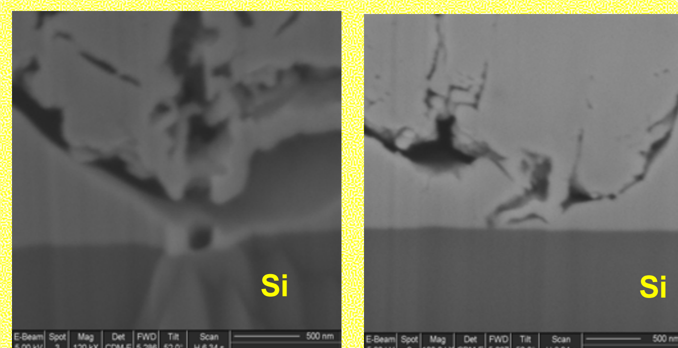


TEM IMAGES AND DIFFRACTION PATTERNS OF DEFECTUOUS AND NON-DEFECTUOUS REGIONS

The investigation showed that the subsurface morphology of these defects was comprised of polycrystalline material, and that the bottom of the morphological defects involved missing material. X-Ray energy dispersive spectroscopy (EDS) showed little composition variation inside or outside the defects. Additionally, no foreign elements were detected in the defect area.

ORIGIN





SEM IMAGES SHOWING DEFECTS AT THE Si SUBSTRATE IN DETAIL

With carefully chosen dissection directions, recent studies show the defects originate from the Si substrate and may grow asymmetrically thereafter.

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