
S E M I N A R
aus
Halbleiterphysik und Nanotechnologie

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“Secondary phase particles and the extended defects in group II-VI telluride semiconductors”

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The presence of secondary phase (SP) particles significantly affects the optical and electronic properties of the bulk crystal as well as of the surface perfection of epitaxial substrates. They appear not only in II-VI (e.g., CdTe, ZnSe), III-V (e.g., GaN), and IV-VI (e.g., SiC) compounds, but also in oxides and fluorides. We are interested in characterizing the defects and tailoring performances of group II-VI telluride semiconductors. The formation and evolution of SP particles and the induced defects are investigated towards the design of materials with either better performance or lower concentration defects. Tailoring of Te-SP and the corresponding extended defects in the as-grown telluride bulk crystals is realized by optimizing the crystal growth and annealing in our lab.

References

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- [2] Yihui He, Wanqi Jie, Yadong Xu, *et al.* Matrix-controlled morphology evolution of Te inclusions in CdZnTe single crystal. *Scripta Materialia*, 2012. 67(1): 5-8.
- [3] Yihui He, Wanqi Jie, Yadong Xu, *et al.* Dislocation-mediated coupling mechanism between the microstructural defects and Te inclusions in CdZnTe single crystals, *Scripta Materialia*, 2014, 82: 17-20.
- [4] Yadong Xu, Ningbo Jia, Yihui He, *et al.* Interplay mechanism between secondary phase particles and extended dislocations in CdZnTe crystals, *Cryst. Eng. Comm.*, 2015, 17(45): 8639-8644.