



FWF SFB INFRARED OPTICAL NANOSTRUCTURES

IR-ON SEMINAR

Exceptionally narrow photocurrent peak and carrier extraction mechanisms in quantum dot infrared photodetectors

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Altenbergerstr. 69, 4040 Linz, Seminarraum Halbleiterphysik

Infrared photodetectors based on intersubband transitions in quantum dots (QDIPs) should, in principle, outperform the ones using quantum wells, because of the possibility of absorbing normal incident light and operating at higher temperatures due to the electron longer lifetimes. Additionally, the 3D confinement should lead to narrower transitions, desirable for sharper wavelength selective detection. In this talk the development of a QDIP which operates around 12 microns with a photocurrent peak as narrow as 4.5 meV will be discussed. Additionally, different carrier extraction mechanisms in InGaAlAs/InAs/InP QDIP structures will be addressed. Finally, the possibility of selecting the operation wavelength of a QDIP by switching the sign of the applied bias will be shown.

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