

Abstract Submitted  
for the MAR08 Meeting of  
The American Physical Society

**Terahertz** **Absorption**  
**of (In,Ga)As Quantum Post Nanostructures**<sup>1</sup> C.M. MORRIS, D. STEHR,  
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PRYOR, Dept. of Physics and Astronomy, University of Iowa, P.M. PETROFF,  
Dept. of Electrical and Computer Engineering, UCSB, M.S. SHERWIN, Physics  
Dept. and Institute for Quantum and Complex Dynamics — Quantum posts (QPs)  
are a new kind of self-assembled semiconductor nanostructure created by vertical  
stacking of self-assembled InAs quantum dots into roughly cylindrical In rich re-  
gions embedded in a GaAs matrix.<sup>2</sup> These structures have potential applications for  
THz quantum information processing,<sup>1</sup> THz generation, and THz detection. For  
a single electron trapped in a 40 nm high QP, the orbital transition between the  
ground and first excited state is predicted to occur near 1 THz.<sup>2</sup> Voltage controlled  
electron loading of QPs is measured by capacitance-voltage spectroscopy. Terahertz  
absorption spectroscopy of electrons in quantum post samples is demonstrated as a  
function of electron loading. <sup>1</sup> M. S. Sherwin, A. Imamoglu and C. Montroy, PRA  
60, 3508 (1999) <sup>2</sup> J. He et al, Nanoletters 7, 802 (2007)

<sup>1</sup>Work supported by the NSF NIRT grant No. CCF 0507295 and the Alexander von  
Humboldt Foundation.

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Date submitted: 30 Nov 2007

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