

Abstract Submitted
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Time resolved spectroscopy of MOVPE grown narrow gap III-Mn-V ferromagnetic semiconductors¹ T. MERRITT, M. BHOWMICK, G.A. KHODAPARAST, Department of Physics, Virginia Tech, Blacksburg, VA, C. FEESER, B.W. WESSELS, Materials Research Center, Northwestern University, Evanston, IL, S. MCGILL, National High Magnetic Field Laboratory, Tallahassee, FL — The emergence of III-Mn-V magnetic semiconductors, has led to a number of exciting results relevant to the spin and charge based applications. Important advances have now been made in the MOVPE growth of the narrow gap ferromagnetic structures with the Tc above room temperature. As the switching rates in electronic and optoelectronic devices are pushed to higher frequencies, understanding the dynamical behavior of non- equilibrium carriers/spins can provide valuable information about different scattering mechanisms, carrier phonon coupling, and band structures. In this work, we report several time- resolved and magneto-optical measurements on $In_{1-x}Mn_xAs$ and $In_{1-x}Mn_xSb$ ferromagnetic films with the Mn content of 4%. Our measurements on the basis of several time resolved differential transmission techniques in NIR and MIR demonstrate unique and complex dynamics in these material systems where photo-induced absorption and bleaching can co-exist.

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