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Time Resolved Spectroscopy of InMnAs Using Differential Transmission Technique in Mid-Infrared Region[1] M. BHOWMICK, K. NONTAPOT, G.A. KHODAPARAST, Physics Department, Virginia Tech., B.W. WESSELS, Materials Research Center, Northwestern University — The emergence of III-Mn-V magnetic semiconductors, such as GaMnAs, InMnAs, and InMnSb has led to a number of exciting results relevant to the new field of spintronics. In contrast to earlier MBE work, InMnAs structures grown by MOVPE at the Northwestern University are room temperature ferromagnetic semiconductors with a T_C of 330 K. The origins of ferromagnetism and the interactions between itinerant carriers and localized spins in these structures are open and interesting questions. The samples are grown on GaAs substrates with the Mn content ranging from 1-4%. The carrier and spin life time in these structures were probed using a differential transmission technique by tuning the pump-probe radiations from 3-3.6 microns. The relaxation times are in order of 2-4 ps similar to the observations in the MBE grown structures. The temperature dependence of the carrier and spin lifetimes will be presented and related to recent models for spin recombination.

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