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Observation of Electron Spin Relaxation Time in pnpn Structured GaAs

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To observe effect of electron-hole exchange interaction on electron spin relaxation time, we performed polarization- and time-resolved PL measurements by using pnpn structured GaAs. This structure is supposed spatial distance between excited electrons and holes are changed by excitation power density. Prolongation of spin relaxation time was observed when excitation power density was weak and distance between electron and hole was long. The change of spin relaxation time attributable to the reduction of electron-hole exchange interaction in pnpn structure.