

PUBLICATION LIST

Kai Shum

- (54) "Electronic structure and microstructure of strain relaxed SiGe films", P.M. Mooney and Kai Shum, in *SiGeC Alloys*, Eds. Sokrates Pantelides and Stefan Zollner, (Gordon and Breach Science Publishers, New York, 2002) pp. 167-193.
- (53) "Demonstration of III-V Semiconductor-based nonvolatile memory devices", Zhongwei Pan and Kai Shum, *Appl. Phys. Lett.* 76, 505 (2000).
- (52) "Spin polarization dependent optical transition rates observed in the integer quantum Hall region", R. Pittini, J.X. Shen, Y. Oka, W. Ossau, Kai Shum, *Physica E6*, 205 (2000)
- (51) "Super-linear photoluminescence and vertical transport of photo-excited carriers in modulation doped heterojunctions", J.X. Shen, R. Pittini, Kai Shum, W. Ossau, Y. Oka, Proc. SPIE, 27 Jan 2000, Session 2.1.
- (50) "Quantum indistinguishability effects of confined polyexcitons", Kai Shum, P. M. Mooney, and J. O. Chu, *Phys. Rev. B* 60, 5786 (1999).
- (49) "Clock Delivery Using Laminated Polymer Fiber Circuits", Yao Li, Jan Popelek, Lijun Wang, Yoshihiro Takiguchi, Ting Wang, Kai Shum, *J. Opt. A*, Vol.1, 239 (1999).
- (48) "100x100 Opto-electronic Cross-connect Interconnects Using OPTOBUS", Jun Ai, Yao Li, Ting Wang, Kai Shum, *IEEE J. of Lightwave Technology*, Vol.17, 765 (1999).
- (47) "Femtosecond dynamics of electron capture and de-capture in quantum-well structures", J. Qureshi, Kai Shum, *SPIE 3624*, 279 (1999).
- (46) "Ultrafast infrared-photon induced optoelectronic switching", J. Qureshi, Kai Shum, *SPIE 3624*, 291 (1999).
- (45) "Real time visualization of electron transport in quantum devices", Kai Shum, J. Qureshi, *SPIE 3624*, 234 (1999).
- (44) "Observation of Non-Radiative Recombination Enhanced Point Defect Reaction in Semiconductors", Minxue Tang, Kai Shum, *Opto-Electronic Engineering (Chinese)*, 168, S1, (1998).
- (43) "Picosecond dynamics of low-density excitons in GaAs quantum wells" Kai Shum, R. R. Alfano, H. Morkoc, *SPIE 3277*, 142 (1998).

- (42) "Dynamics of recombination-enhanced defect reaction in ZnCdSe single quantum well", Minxue Tang, Kai Shum, L. Zeng, and M. C. Tamargo, *Appl. Phys. Lett.* 73, 1541 (1998).
- (41) "A new concept for non-volatile memories", Kai Shum, Jianqin Zhou, Wei Zhang, Linfei Zeng, and M. C. Tamargo, *Appl. Phys. Lett.*, 71, 2487 (1997).
- (40) "Dislocation-related photoluminescence peak shift due to atomic interdiffusion in SiGe/Si", Kai Shum, P. M. Mooney, J. O. Chu, *Appl. Phys. Lett.*, 71, 1074, (1997).
- (39) "Room temperature differential negative resistance in an Al/Zn0.61Cd0.39Se/n+-InP device", Kai Shum, J. Zhou, W. Zhang, L. Zeng, and M. C. Tamargo, *Appl. Phys. Lett.* 71, 815 (1997).
- (38) "Observation of biexcitons in SiGe grown on Si(001)", Kai Shum, P. M. Mooney, L. P. Tilly, and J. O. Chu, *Phys. Rev. B* 55, 13058 (1997).
- (37) "Dislocation Related Electronic States in Strain Relaxed Si_{1-x}Ge_x/Si Epitaxial Layers Grown at Low Temperature", P.M. Mooney and Kai Shum, *Defects in Semiconductors ICDS 19*, Mat. Sci Forum **258 263**, 151 (1997)
- (36) "Dislocation-related photoluminescence in strain-relaxed SiGe buffer layer structures", Proc. of Materials Research Society, Kai Shum, P. M. Mooney, L. P. Tilly, and J. O. Chu, Mat. Res. Soc. Symp. Proc. 442, 325 (1997).
- (35) "Observation of quantum carrier confinement near Zn0.61Cd0.39Se/InP hertointerface", Kai Shum, L. Zeng, N. Dai, and M. C. Tamargo, *Appl. Phys. Lett.* 69, 4200 (1996)
- (34) "Barrier potential design criteria in multiple-quantum-well-based solar cell structures", J. M. Mohaidat, Kai Shum, W. B. Wang, and R. R. Alfano, *J. Appl. Phys.* 79, 5533 (1994).
- (33) "High power picosecond pulse amplification and generation in field-effect GaAs laser diode with saturable absorption", K. Sutkus, Kai Shum, R. R. Alfano, *IEEE J. of Quan. Elec.* Vol.30, 2688 (1994).
- (32) "Ultrafast charging dynamics in a double-barrier structures in the presence of localized phonon modes", J. M. Mohaidat, Kai Shum, R. R. Alfano, *Solid State Comm.* Vol.92, 843 (1994).
- (31) "Effect of carrier heating on the wavelength chirp of ultrafast laser pulses in semiconductor traveling wave amplifiers", K. Sutkus, Kai Shum, R. R. Alfano, and P. J. Delfett, *IEEE Photonics Tech. Lett.* Vol.6, 372 (1994).
- (30) "Electron-tunneling dynamics through a double barrier structure in the presence of phonons", J. M. Mohaidat, Kai Shum, and R. R. Alfano, *Phys. Rev. B* 48, 8809 (1993).

- (29) "A field-effect GaAs diode laser with controlled carrier distribution in Gamma and satellite valleys", K. Sutkus, Kai Shum, and R. R. Alfano, IEEE Photonics Technology Letters, Vol.9, (1992).
- (28) "Piezospectroscopy of GaAs and GaAs/AlGaAs single quantum wells grown on (001) Si substrates", H. Qiang, F. H. Pollak, Kai Shum, Y. Takiguchi, R. R. Alfano, H. Morkoc, Appl. Phys. Lett. 60, 2651 (1992).
- (27) "Observation of 1P excitonic state in Cd(S,Se) quantum dots", Kai Shum, W. Wang, R. R. Alfano, and K. M. Jones, Phys. Rev. Lett. 68, 3904 (1992).
- (26) "L6-X6 inter-valley scattering time and deformation potential for AlGaAs determined by femtosecond time-resolved infrared absorption spectroscopy", W. B. Wang, Kai Shum, R. R. Alfano, D. Szmyd, and A. J. Nozik, Phys. Rev. Lett. 68, 662 (1992).
- (25) "Excitonic effect on coherent oscillation of a photo-excited wave packet in double quantum wells", J. M. Mohaidat, Kai Shum, and R. R. Alfano, Phys. Rev. B 45, 3822 (1992).
- (24) "Investigation of the L6-X6 inter-valley scattering in AlGaAs by measuring hot carrier dynamics in X satellite valley", W. B. Wang, Kai Shum, R. R. Alfano, D. Szmyd, and A. J. Nozik, Semicond. Sci. Technol. 7, 173 (1992).
- (23) "Exciton trapping in strained GaAsP quantum wells", Y. Takiguchi, Kai Shum , R. R. Alfano, E. S. Koteles, D. C. Bertolet, J. K. Hsu, and K. M. Lau, Semicond. Sci. Technol. 7, 170 (1992).
- (22) "Hot carrier dynamics in GaAs epilayers structures grown on Si", Kai Shum, Y. Takiguchi, J. M. Mohaidat, R. R. Alfano, K. Adomi, and H. Morkoc, Semicond. Sci. Technol. 7, 195 (1992).
- (21) "Hot carrier dynamics in a satellite valley in AlGaAs", W. B. Wang, Kai Shum, R. R. Alfano, D. Szmyd, and A. J. Nozik, SPIE 1599, 106 (1991).
- (20) "Picosecond G-X carrier scattering in GaAs/AlAs superlattice", Y. Takiguchi, Kai Shum, R. R. Alfano, and M. Dutta, SPIE Vol.1599, 90 (1991).
- (19) "Spontaneous emission spectrum of a tunneling electron through a double barrier structure", G. Bai, Kai Shum, and R. R. Alfano, J. Appl. Phys. 70, 1025 (1991).
- (18) "Effects of valence subband structure on the energy relaxation dynamics of electrons in GaAs quantum wells grown on Si", Kai Shum, Y. Takiguchi, J. M. Mohaidat, R. R. Alfano, K. Adomi, and H. Morkoc, Phys. Rev. B 44, 4044 (1991).
- (17) "Density of states in semiconductor nanostructures", Kai Shum, J. Appl. Phys. 69, 6484 (1991).

- (16) "Resonant level lifetime in GaAs/AlGaAs double-barrier structures in the consideration of G-X mixing", T. F. Zheng, M. Lax, Kai Shum, and R. R. Alfano, *J. Appl. Phys.* 69, 8387 (1991).
- (15) "Hot hole energy relaxation dynamics in GaAs grown on Si", Kai Shum, Y. Takiguchi, R. R. Alfano, and H. Morkoc, *SPIE* 1262, 156 (1990).
- (14) "Photon-assisted resonant tunneling through a double barrier semiconductor", W. Cai, T. F. Zheng, P. Ho, M. Lax, Kai Shum, and R. R. Alfano, *Phys. Rev. Lett.* 65, 104 (1990).
- (13) "Picosecond hole dynamics in GaAs grown on silicon", Kai Shum, Y. Takiguchi, J. M. Mohaidat, F. Liu, and R. R. Alfano, *Appl. Phys. Lett.* 56, 2328 (1990).
- (12) "Review of [Optical nonlinearities and instability in semiconductors]", R. R. Alfano, and Kai Shum, *Optical Engineering*, 28, 169 (1989).
- (11) "Ultrafast processes in quasi-zero-dimensional semiconductor particles in glasses", Kai Shum, and R. R. Alfano, *SPIE* 794, (1988).
- (10) "Effects of nonequilibrium phonons on the energy relaxation and recombination lifetime of photogenerated carriers in undoped GaAs quantum wells", Kai Shum, M. R. Junnarkar, H. S. Chao, R. R. Alfano, and H. Morkoc, *Phys. Rev. B* 37, 8923 (1988).
- (9) "Nonequilibrium phonon effects on the time-dependent relaxation of hot carriers in GaAs MQW", Kai Shum, M. R. Junnarkar, H. S. Chao, R. R. Alfano, and H. Morkoc, *Solid-state Electronics* 31, 451 (1988).
- (8) "Reply to [Comment on 'Determination of valence band discontinuity via optical transitions in ultrathin quantum wells']", Kai Shum, C. Zhang, P. P. Ho, and R. R. Alfano, *Phys. Rev. B* 37, 1408 (1988).
- (7) "Optical transitions and recombination lifetimes in quasi-zero dimensional electron system in CdS_xSe_{1-x}", Kai Shum, G. C. Tang, M. R. Junnarkar, and R. R. Alfano, *SPIE* 793, 150 (1987).
- (6) "Confinement effects on the scattering of electrons by polar optical phonons in semiconductor quantum wells", Kai Shum and R. R. Alfano, *SPIE* 793, 70 (1987).
- (5) "Energy relaxation and ballistic diffusion of photo-excited carriers in symmetric and asymmetric quantum wells", Kai Shum, M. R. Junnarkar, H. S. Chao, R. R. Alfano, and H. Morkoc, *SPIE* 793, 6 (1987).
- (4) "Ultrashort spontaneous lifetimes for transitions in quasi-zero dimensional electron systems in CdS_xSe_{1-x}", Kai Shum, G. C. Tang, M. R. Junnarkar, and R. R. Alfano, *Appl. Phys. Lett.* 51, 1839 (1987).

- (3) "Dependence of electron temperature on well width in the Al_{0.48}In_{0.52}As-Ga_{0.47}In_{0.53}As single quantum well", Kai Shum, P. P. Ho, Alfano, D. F. Welch, and L. F. Eastman, IEEE Journal of Quantum Electronics, QE-22, 1811(1986).
- (2) "Determination of valence-band discontinuity via optical transitions in ultrathin quantum wells", Kai Shum, P. P. Ho, and R. R. Alfano, Phys. Rev. B 33, 7259 (1986).
- (1) "Photoluminescence determination of well depth of Ga_{0.47}In_{0.53}As-Al_{0.48}In_{0.52}As in ultrathin single quantum wells", Kai Shum, P. P. Ho, R. R. Alfano, D. F. Welch, G. W. Wicks, and L. F. Eastman, Phys. Rev. B 32, 3806(1985).