CV of **KONG‑THON TSEN**

**CURRENT** Professor

**POSITION:** Department of Physics

Arizona State University

Tempe, AZ 85287

**EDUCATION:** Ph.D. Experimental solid state physics (June, 1983)

Purdue University, W. Lafayette, IN 47907

M.S. Physics (May, 1978)

Purdue University, W. Lafayette, IN 47907

B.S. Physics (May 1974)

Fu‑Jen Catholic University, Taiwan, R.O.C.

**HONORS AND MEMBERSHIP:**

1. Member of American Physical Society;

2. Member of Optical Society of America;

3. Member of SPIE – The International Society for Optical Engineering

4. Member of Sigma Pi Sigma (National Physics Honor Society);

5. David‑Ross Scholarship fellow (from 1978 to 1980);

6. Member of Sigma Xi (American Scientific Research Society);

7. Recipient of Lark‑Horovitz prize in physics (Purdue University, April 1983).

8. Member of WHO IS WHO INTERNATIONAL.

9. Consulting Scientist for New York State Office of Science, Technology and Academic

Research (NYSTAR), 2002 to present.

10. Outstanding Alumni Award (Fu-Jen University, 2004)

11. Member, editorial board: Superlattices and Microstructures (March, 2006 to Oct. 2007)

12. Member, editorial board: Journal of Spectroscopy (June, 2012 to present)

13. Outstanding Teaching Award (Physics Department, Arizona State University, 2012)

14. Member, editorial board: SM Journal of Biomedical Engineering (July, 2015 to present).

**PROFESSIONAL CAREER:**

July 1997 - Professor (Arizona State University);

to present

July 1990 ‑ Associate Professor (Arizona State University);

June 1997

August 1984 ‑ Assistant Professor (Arizona State University);

June 1990

July 1983 ‑ Research Associate (University of Illinois);

July 1984

August 1978 ‑ Research Assistant (Purdue University);

June 1983

August 1976 ‑ Teaching Assistant (Purdue University).

**RESEARCH INTERESTS:**

Tsen’s research interest focuses on the interaction of light with solid state and biological systems; in particular, on the use of ultrafast laser sources to elucidate novel electron transport phenomena, dynamical properties of lattice vibrations in low-dimensional and nanostructure semiconductors as well as microscopic mechanisms in biological systems such as viruses, bacteria and cells. He has given more than 50 invited talks in the national and international conferences. He has served as the Chair/co-chair of the annual SPIE Photonic West International Symposium on Ultrafast Phenomena in Semiconductors and Nanostructure Materials since 1997. He has published 1 book, has more than 200 refereed publications and has edited 4 books in the area of ultrafast phenomena in semiconductors. Book published: “Selective Photonic Disinfection: A Ray of Hope in the War Against Pathogens”, Shaw-Wei D. Tsen and Kong-Thon Tsen. IOP Concise Physics ebook (Morgan & Claypool publication, San Rafael, CA),104 pages, 2016.  Books edited: (1) "Ultrafast Phenomena in Semiconductors" published by Springer-Verlag (New York,2001). (2) "Ultrafast Physical Processes in Semiconductors", published by Academic Press as the book Volume #67 in the series – “Semiconductors and Semimetals”, edited by R.K. Willardson and E.R. Weber(New York, 2001). (3) “Ultrafast Dynamical Processes in Semiconductors”, published as the book Volume #92 in the series – Topics in Applied Physics, by Springer-Verlag (Heidelberg, 2004). (4) “Non-equilibrium Dynamics of Semiconductors and Nanostructures”, published by CRC press Inc. (New York, 2005)

**Patents:**

1. System and method for inactivating microorganisms with a femtosecond laser. Republic of South Africa (ZA). Published #: ZA zo1000380.
2. System and method for inactivating microorganisms with a femtosecond laser.

People’s Republic of China. Published #: CN101971008B.

**Publications: books, edited Books, edited Proceedings, Book chapters and Journals:**

**(A) Books edited:**

(1) "*Ultrafast Phenomena in Semiconductors*" published by Springer-Verlag (New York,

2001).

(2) "*Ultrafast Physical Processes in Semiconductors*", published by Academic Press as the book

Volume #67 in the series – “*Semiconductors and Semimetals*”, edited by R.K. Willardson and

E.R. Weber (Boston, 2001).

(3) “*Ultrafast Dynamical Processes in Semiconductors*”, published as the book Volume #92

in the series – Topics in Applied Physics, by Springer-Verlag (Heidelberg, 2004).

(4) “*Non-equilibrium Dynamics of Semiconductors and Nanostructures*”, published by CRC press,

Inc. (New York, 2005)

(5) “Selective Photonic Disinfection: A Ray of Hope in the War Against Pathogens”, Shaw-Wei D. Tsen

and Kong-Thon Tsen. IOP Concise Physics ebook (Morgan & Claypool publication, San Rafael, CA),

104 pages, 2016.

**(B) Proceedings edited:**

(1) Proc. of Photonic West’98 Int. Sym. on "*Ultrafast Phenomena in Semiconductors II*",

published by SPIE (with Harold R. Fetterman); Vol. 3277.

(2) Proc. of Photonic West’99 Int. Sym. on "*Ultrafast Phenomena in Semiconductors*

*III*", published by SPIE; Vol. 3624;

(3) Proc. of Photonic West’00 Int. Sym. on "*Ultrafast Phenomena in Semiconductors*

*IV*", published by SPIE (with Jin-Joo Song); Vol. 3940;

(4) Proc. of Photonic West’01 Int. Sym. on "*Ultrafast Phenomena in Semiconductors*

*V*", published by SPIE (with Hong-Xing Jiang and Jin-Joo Song). Vol. #4280

(5) Proc. of Photonic West’02 Int. Sym. on "*Ultrafast Phenomena in Semiconductors*

*VI*", published by SPIE (with Hong-Xing Jiang and Jin-Joo Song). Vol. 4643.

(6) Proc. of Photonic West’03 Int. Sym. on "*Ultrafast Phenomena in Semiconductors*

*VII*", published by SPIE (with Hong-Xing Jiang and Jin-Joo Song). Vol. 4992.

(7) Proc. of Photonic West’04 Int. Sym. on "*Ultrafast Phenomena in Semiconductors and*

*Nanostructures VIII*", published by SPIE (with Hong-Xing Jiang and Jin-Joo Song), Vol.5352.

(8) Proc. of Photonic West’05 Int. Sym. on "*Ultrafast Phenomena in Semiconductors and*

*Nanostructures IX*", published by SPIE (with Hong-Xing Jiang and Jin-Joo Song), Vol. 5725.

(9) Proc. of Photonic West’06 Int. Sym. on "*Ultrafast Phenomena in Semiconductors and*

*Nanostructures X*", published by SPIE (with Hong-Xing Jiang and Jin-Joo Song), Vol. 6118.

(10) Proc. of Photonic West’07 Int. Sym. on "*Ultrafast Phenomena in Semiconductors and*

*Nanostructures XI*", published by SPIE (with Jin-Joo Song), Vol. 6471.

(11) Proc. of Photonic West’08 Int. Sym. on "*Ultrafast Phenomena in Semiconductors and*

*Nanostructures XII*", published by SPIE (with Jin-Joo Song), Vol. 6892.

(12) Proc. of Photonic West’09 Int. Sym. on "*Ultrafast Phenomena in Semiconductors and*

*Nanostructures XIII*", published by SPIE (with Jin-Joo Song), Vol. 7214.

(13) Proc. of Photonic West’10 Int. Sym. on "*Ultrafast Phenomena in Semiconductors and*

*Nanostructures XIV*", published by SPIE (with Jin-Joo Song), Vol. 7600.

(14) Proc. of Photonic West’11 Int. Sym. on "*Ultrafast Phenomena in Semiconductors and*

*Nanostructures XV*", published by SPIE (with Jin-Joo Song), Vol. 7937.

(15) Proc. of Photonic West’12 Int. Sym. on "*Ultrafast Phenomena in Semiconductors and*

*Nanostructures XVI*", published by SPIE (with Jin-Joo Song), Vol. 8260.

(16) Proc. of Photonic West’13 Int. Sym. on "*Ultrafast Phenomena in Semiconductors and*

*Nanostructures XVII*", published by SPIE (with M. Betz, A. Elezzabi and Jin-Joo Song), Vol. 8623.

(17) Proc. of Photonic West’14 Int. Sym. on "*Ultrafast Phenomena in Semiconductors and*

*Nanostructures XVIII*", published by SPIE (with M. Betz, A. Elezzabi and Jin-Joo Song), Vol. 8984.

(18) Proc. of Photonic West’15 Int. Sym. on "*Ultrafast Phenomena in Semiconductors and*

*Nanostructures XX*", published by SPIE (with M. Betz, A. Elezzabi), Vol. X.

**(C) Book Chapters written:**

(1) "Electron velocity overshoot, ballistic electron transport and non-equilibrium phonon

dynamics in nanostructure semiconductors", in *Ultrafast Phenomena in*

*Semiconductors,* edited by K.T. Tsen (Springer-Verlag NY, 2001), p. 191-259.

(2) "Ultrafast dynamics in wide bandgap wurtzite GaN", in *Ultrafast Physical processes in*

*semiconductors,* edited by K.T. Tsen (Academic Press, Boston, 2001), p. 109-149.

(3) "Time-resolved Raman studies of wide bandgap wurtzite GaN", in *III-V nitride*

*semiconductors : Optical properties* , edited by O. Manasreh and H.X. Jiang (Taylor &

Francis, New York, 2002). P. 85 – 134.

(4) “Time-resolved/transient Raman studies of electric-field-induced transient carrier transport in

nanostructure semiconductors”, in “*Recent Research Developments in Raman Spetroscopy*”,

Vol. 1, edited by S.G. Pandalai (Transworld Research Network, Trivandrum, 2002). P. 123 –

160.

(5) “Optical studies of electric-field induced electron and hole transient transports and optical

phonon instability in semiconductor nanostructures”, in “*Ultrafast Dynamical Processes in*

*Semiconductors”,* edited by K.T. Tsen in the series – Topics in Applied Physics, by Springer-

Verlag (Heidelberg, 2004), p. 193-258..

(6) “Non-equilibrium carrier dynamics in nitride based semiconductors”, in *Non-equilibrium*

*Dynamics of Semiconductors and Nanostructures*”, edited by K.T. Tsen, (CRC press

Inc. New York, 2005). p. 179-213.

(7) “Inactivation of viruses with femtosecond laser pulses” K.T. Tsen, Shaw-Wei D. Tsen, Eric C.

Dykeman, Otto F. Sankey, and Juliann G. Kiang, in “Contemporary Trends in Bacteriophage

Research” edited by Horace T. Adams (Nova Science Publishers, Inc). ISBN: 978-1-60692-181-4

(2009). P. 151-177.

**(D) Journal publications:**

(1) Two‑phonon Raman scattering probe of non‑equilibrium, high frequency acoustic phonons: The TA

phonon Bottleneck in GaAs. K.T. Tsen, D. Abramsohn and R. Bray. Phys. Rev. B26, 4770‑4773

(1982).

(2) Critical evaluation of the light scattering spectrum for Single Particle Excitations in n‑GaAs at 300 K.

D. Abramsohn, K.T. Tsen and R. Bray. Phys. Rev. B26, 6571‑6587 (1982).

(3) Collision‑Narrowing of Raman spectrum for Spin‑Density Fluctuations of electrons in n‑GaAs. K.T.

Tsen and R. Bray. Solid State Communications 45, 685‑687 (1983).

(4) Raman probe of the large wavevector TA phonon Bottleneck in GaAs. K.T. Tsen, D. Abramsohn and

R. Bray, Physica 117B & 118B, 543‑ 545 (1983).

(5) Electronic Raman Scattering from Carbon Acceptors in Undoped GaAs‑AlGaAs Multiple Quantum

Well Heterostructures. K.T. Tsen, J. Klem and H. Morkoc. Solid State Communications 59, 537‑540

(1986).

(6) Population relaxation time of non‑equilibrium LO phonons and electron‑ phonon interactions in

GaAs‑AlGaAs multiple quantum wells. K.T. Tsen and H. Morkoc. Phys. Rev. B34, 4412‑4414 (1986).

(7) Picosecond time‑resolved Raman studies of the expansion of electron‑hole plasma in GaAs‑AlGaAs

multiple quantum well structures. K.T. Tsen and H. Morkoc. Phys. Rev. B34, 6018‑6021 (1986).

(8) Picosecond time‑resolved Raman studies of the expansion of electron‑hole plasma in Si. K.T. Tsen.

Phys. Rev. B35, 4134‑4136 (1987).

(9) Laser‑induced anti‑Stokes resonance Raman scattering: probe for energy transfer in

center/CN‑ molecule defect‑pair in CsCl. K.T. Tsen, G. Halama and F. Luty. Phys. Rev. B36,

9247‑9252 (1987).

(10) Expansion of the electron‑hole plasma in Si: A picosecond time‑resolved Raman probe. K.T. Tsen,

O.F. Sankey. Phys. Rev. B37, 4321‑4324 (1988).

(11) Picosecond Raman studies of the optical phonons in the AlGaAs layers of GaAs‑AlGaAs multiple

quantum well structures. K.T. Tsen and H. Morkoc. Phys. Rev. B37, 7137‑7139 (1988).

(12) Subpicosecond time‑resolved Raman spectroscopy of LO phonons in GaAs‑ AlxGa1‑xAs multiple

quantum well structures. K.T. Tsen and H. Morkoc. Phys. Rev. B38, 5615‑5616 (1988).

(13) Time‑resolved Raman scattering of non‑equilibrium LO phonons in GaAs quantum wells. K.T. Tsen,

R.P. Joshi, D.K. Ferry and H. Morkoc. Phys. Rev. B39, 1446‑1449 (1989).

(14) Transport of the photoexcited electron‑hole plasma in GaAs quantum wells. K.T. Tsen, O.F. Sankey,

G. Halama, S.‑C.Y. Tsen and H. Morkoc. Phys. Rev. B39, 6276‑6278 (1989).

(15) Determination of the local Al concentration in the AlxGa1‑xAs‑GaAs quantum‑well structures with

the (200) diffraction intensity. H.‑J. Ou, S.‑C.Y. Tsen, K.T. Tsen, J.M. Cowley, J.I. Chyi, A. Salvador

and H. Morkoc. Appl. Phys. Lett. 54, 1454‑1456 (1989).

(16) Experimental and theoretical studies of energy transfer in F‑center/OH‑ (OD‑) defect pairs in KCl. G.

Halama, K.T. Tsen, S.H. Lin, F. Luty and J.B. Page. Phys. Rev.B39, 13457‑13464 (1989).

(17) Transport of the photoexcited electron‑hole plasma in InP. K.T. Tsen, G. Halama, O.F. Sankey and

S.‑C.Y. Tsen. Solid State Electronics, 32, 1331‑ 1335 (1989).

(18) Time‑resolved Raman studies of the photoexcited electron‑hole plasma in InP. K.T. Tsen, G. Halama,

O.F. Sankey, S.‑C.Y. Tsen and H. Morkoc. Phys. Rev. B40, 8103‑8106 (1989).

(19) Nature of energy transfer processes in F‑center/CN‑ defect paris in CsC1. G. Halama, S.H. Lin, K.T.

Tsen, F. Luty and J.B. Page. Phys. Rev. B41, 3136‑3144 (1990).

(20) Monte Carlo study of the transient expansion of photoexcited plasmas in bulk semiconductors:

non‑equilibrium phonon effects. R.P. Joshi, K.T. Tsen and D.K. Ferry. Phys. Rev. B41, 9899‑9906

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(21) Transport properties of excitons in GaAs quantum well‑‑a time‑resolved Raman probe. K.T. Tsen,

O.F. Sankey and H. Morkoc. Appl. Phys. Letts. 57, 1666‑1668 (1990).

(22) Raman scattering by interface phonons in GaAs‑AlAs multiple quantum well structures‑‑correlation

between Raman and Transmission Electron Microscope results. K.T. Tsen, D. Smith and S.‑C.Y.

Tsen and H. Morkoc. J. Appl. Phys. 70, 418-423 (1991).

(23) Anti‑Stokes resonance Raman studies of energy transfer processes in F‑ center/CN‑ defect pairs in

KBr. G. Halama, K.T. Tsen, S.H. Lin, F. Luty and J.B. Page. Phys. Rev. B44, 2040-2045 (1991).

(24) Electron‑optical phonon interactions in ultrathin GaAs‑AlAs multiple quantum well structures. K.T.

Tsen, Keith R. Wald, Tobias Ruf, P.Y. Yu and H. Morkoc. Phys. Rev. Lett. 67, 2557-2560 (1991).

(25) Transient time‑resolved Raman scattering in semiconductors: Band‑ structure effects. C.T. Chia, O.F.

Sankey and K.T. Tsen. Phys. Rev. B., 45, 6509-6516 (1992).

(26) Time-resolved Raman studies of non-equilibrium excitation in GaAs-AlxGa1-xAs multiple quantum

well structures (invited review paper). K. T. Tsen. Modern Physics Letters, B Vol. 6, #12, 703-716

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(27) Picosecond time‑resolved Raman studies of electron‑optical phonon interactions in ultrathin

GaAs‑AlAs multiple quantum well structures. K.T. Tsen. Semiconductor Science and Technology,

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(28) Theorietical study of time-resolved Raman scattering profiles of hot electrons in semiconductors. C.

Chia, O. H. Sankey and K. T. Tsen. J. Appl. Phys., 72, 4325-4335 (1992).

(29) Study of electron-phonon interaction in quantum wells using optically excited non-equilibrium

population of phonon. T. Ruf, K. Wald, P. Y. Yu, K. T. Tsen, H. Morkoc and K. T. Chan.

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(30) Direct measurements of electron-optical phonon scattering rates in ultrathin GaAs-AlAs multiple

quantum well structures. K. T. Tsen, R. Joshi and H. Morkoc. Appl. Phy. Letts. 62, 2075-2077

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(31) Analysis of Single-particle scattering spectra due to spin-density fluctuations in n-GaAs. K. T. Tsen,

C. Chia and O. F. Sankey. J. Appl. Phys. 73, 3023-3027 (1993).

(32) Theoretical studies of transient Raman scattering of electrons in semiconductors. C. Chia, O. F.

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(33) Population relaxation time of optical phonons in GaAs-AlAs MQWS. K.T. Tsen, C. Chia, J. West, and

H. Morkoc. Modern Phys. Letts. B, Vol 7, No. 13814, 887-893 (1993).

(34) Electron-optical phonon interactions in polar semiconductor quantum wells. K. T. Tsen (Invited

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(35) Critical analysis of the band-shape function of a molecular system imbedded in a host crystal –

application to F- Centers. J. West, S.H. Lin and K. T. Tsen, J. of Chem. Phys. 99, 7574-7585 (1993).

(36) Picosecond Raman studies of electric-field-induced non-equilibruim carrier distributions in GaAs –

based p-i-n nanostructure semiconductors. E. Grann, S.J. Sheih, C. Chia, K.T.Tsen, O.F. Sankey, S.

Gunser, D.K. Ferry, G. Maracus, R. Droopad, A. Salvador, A. Botcharev, H. Morkoc. Appl. Phys.

Lett. 64, 1230-1232 (1994).

(37) Absorption-line-shape model for F-Center/CN- molecule defect pairs in CsCl. J. West, K.T. Tsen,

S.H. Lin. Phys. Rev. B50, 9759-9766 (1994).

(38) Transient Raman studies of high-field electron transport in polar semiconductors. E.D. Grann, S.J.

Sheih, K.T. Tsen, O. F. Sankey, S.E. Gunser, D.K. Ferry, A. Salvador, A. Botcharev and H. Morkoc.

Phys. Rev. B51, 1631-1641 (1995).

(39) Non-equilibrium electron distribution and high-field electron transport in an AlGaAs based p-i-n

nanostructure semiconductor - a picosecond Raman probe. E.D. Grann. S.J. Sheih, K.T. Tsen, S.E.

Guncer, D.K. Ferry, A. Salvador, A. Botcharev and H. Morkoc. IEEE J. of Selected Topics in

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sub-picosecond Raman spectroscopy. E.D. Grann, K.T. Tsen, O.F. Sankey, D.K. Ferry, A. Salvador,

A. Botcharev and H. Morkoc. Appl. Phys. Letts. 67, 1760-1762 (1995).

(41) Electron-phonon interactions in the wide bandgap semoconductor GaN, S.J. Sheih, K.T. Tsen, D. K,

Ferry, A. Botchkarev, B. Sverdlov, A. Salvador, H. Morkoc. Appl. Phys. Letts. 67, 1757-1759 (1995).

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period GaAs-AlAs multiple quantum well structures, K.T. Tsen, J. of Raman

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(43) Study of the absorption spectrum of F-center/OH¯ defect pairs in CsCl, CsI and CsBr, J. West, K.T.

Tsen and S.H. Lin. Modern Physics Letters B, Vol.9, No. 26 &27, 1759-1769 (1995).

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InAs studied by subpicosecond Raman spectroscopy. E.D. Grann, K.T. Tsen and

D.K. Ferry, Phys. Rev. B53, 9847-9851 (1996).

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spectroscopy. K.T. Tsen, E.D. Grann, S. Guha and J. Menendez, Appl. Phys.

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(46) Electron velocity overshoot and non-equilibrium phonons in GaAs-based p-i-n nanostructure

semiconductor studied by transient subpicosecond Raman spectroscopy, E. D. Grann, K.T. Tsen, D.K.

Ferry, A. Salvador, A. Botcharev, H. Morkoc. Phys. Rev. B53, 9838-9846 (1996).

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electron distributions in CdTe. E. Grann, Y. Chen, K.T. Tsen, D.K. Ferry, T. Almeiba, Y.P.

Chen, S. Sivananthan, J. Appl. Phys. 80, 3840-3843 (1996).

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R.P. Joshi, D.K. Ferry, A. Botcharev, B. Sverdlov, A. Salvador and H. Morkoc, Appl. Phys.

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semicondtor -- a subpicosecond Raman probe. K.T. Tsen, D.K. Ferry, J.S. Wang, C.H.

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a GaAs-based p-i-n nanostructure under subpicosecond laser excitation. K.T. Tsen, R.P.

Joshi, A. Salvador, A. Botcharev and H. Morkoc, J. Appl. Phys. 81, 406-408 (1997).

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(54). Direct measurements of electron-longitudinal optical phonon scattering rates in wurtzite

GaN, K.T. Tsen, D.K. Ferry, A. Botcgkarev, B. Averdlov, A. Salvodor and H.Morkoc. Appl.

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Electron Microscopy and Raman spectroscopy, S.-C.Y. Tsen, D.J. Smith, K.T. Tsen. W.

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K.T. Tsen, D.K. Ferry , A. Botchkarev, B. Sverdlov, A. Savador, and H. Morkoc, J. Electronic

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monotonic dependence upon the alloy composition. K.T. Tsen, D.K. Ferry, A.Salvador and H.

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K.T. Tsen, Physica B272, 419-421 (1999).

(60) Ballistic electron transport in InP observed by subpicosecond time-resolved Raman

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(61) Decay of the longitudinal optical phonons in wurtzite GaN and AlGaN, K.T. Tsen,

D.K. Ferry, S.M. Goodnick, A. Salvador, H. Morkoc, Physica B272, 406-408 (1999).

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Chen, H. Morkoc, J. Li, J.Y. Lin, H-X. Jiang, Internet Journal of Nitride Semiconductor

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picosecond Raman spectroscopy, Y. Chen, K.T. Tsen and O.F. Sankey, D.K. Ferry, Phys.

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n nanostructure, Y. Chen, K.T. Tsen and O.F. Sankey, D.K. Ferry. Physica B314, 278 (2002).

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laser, Shaw-Wei D. Tsen, David H. Kingsley, Christian Poweleit, Samuel Achilefu, Douglas S.

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## (118) Inhibition of *Escherichia coli* respiratory enzymes by short visible femtosecond laser irradiation

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**Invited talks:**

1. “Subpicosecond time‑resolved Raman studies of electron‑phonon and phonon‑ phonon interactions in

GaAs‑AlxGa1‑xAs multiple quantum well structures”, presented at the 10th Int. Conf. on Lasers and

Applications, December 7‑ 11, 1987 (Lake Tahoe, NV).

2. “Time‑resolved Raman studies in GaAs‑AlxGa1‑xAs multipled quantum well structures”, presented at

"Ultrafast Laser Probe in Bulk and Microstructure Semiconductors II" SPIE Symposium, March 13‑18,

1988 (Newport Beach, CA).

3. “Non-equilibrium carrier relaxation in semiconductor quantum well structures”, Department of Physics,

National Tsin-Hwa University, Taiwan, July 15, 1990.

4. “Time‑resolved Raman studies of the transport properties of exciton in GaAs quantum wells”.

Presented at the NATO Advanced Research Workshop on Light Scattering in Semiconductors

Structures and Superlatticies. March 15-19, 1990 (De Tremblant, Canada).

5. “Nonequilibrium phonon effects on the transient expansion of photoexcited electron‑hole plasma”.

"Ultrafast Laser Probe in Bulk and Microstructure Semiconductors III". SPIE Symposium, March

18‑21, 1990, (San Diego, CA).

6. “Time-resolved Raman studies of electron-optical phonon interactions in GaAs-AlAs multiple quantum

well structures”. NATO Advanced Research Workshop on "phonons in semiconductor nanostructures".

Sept. 27-30 (Barcelona, Spain , 1992).

7. “Electron-optical phonon interactions in polar semiconductor quantum wells”. American Physical

Society, March meeting, March 23-27 (Seattle, WA , 1993).

8. “Picosecond and sub-picosecond time-resolved Raman studies of thin GaAs-AlAs multiple quantum well

structures”. XIVth Int. Conf. on Raman Spectroscopy (Hong Kong, Aug. 1994).

9. “Carrier relaxations in GaN”, presented at the Ameriacn Physical Society,

March meeting, March 22-26 (Kansas City, MO, 1997).

10. “Subpicosend/picosecond time-resolved Raman studies of electron-phonon, phonon

phonon interactions and novel transient carrier properties in semiconductors”,

(Institute of Atomic and Molecular Sciences, Academia Sinica, Taiwan, Nov.

11, 1997).

11. “Electron-phonon interactions in AlGaAs-nonmonotonic dependence upon the alloy

composition”, K.T. Tsen, D.K. Ferry, A. Salvador, H. Morkoc. SPIE Photonic West'99

Int. Sym. on "Ultrafast Phenomena in Semiconductors III", San Jose, CA (Jan. 1999).

12. “Time-resolved Raman spectroscopy as a probe for novel electron transport in

semiconductors”, presented at National Tsin-Hwa University (Taiwan, Nov, 1999)

13. “Novel electron transport in semiconductor nanostructures studied by time-resolved

Raman spectroscopy”, presented at Fu-Jen University (Taiwan, Nov, 1999).

14. “Subpicosecond time-resolved Raman studies of ballistic electron transport in InP”. SPIE

Photonic West'00 Int. Sym. on “Ultrafast Phenomena in Semiconductors IV", San Jose, CA

(Jan. 2000).

15. “Non-equilibrium electron distributions and energy loss rate in InGaAsN studied by

picosecond Raman spectroscopy”. SPIE Photonic West'01 Int. Sym. on "Ultrafast

Phenomena in Semiconductors V", (San Jose, Jan. 2001).

16. “Studies of field-induced transient hole transport in an AlGaAs-based p-I-n nanostructure by

picosecond Raman spectroscopy”. SPIE Photonic West'02 Int. Sym. on Ultrafast

Phenomena in Semiconductors VI. (San Jose, Jan. 2002).

17. “Picosecond/subpicosecond time-resolved Raman studies of electron and hole transports in

nanostructure semiconductors”, presented at National Taiwan University on Dec. 26, 2002.

18. “Subpicosecond time-resolved Raman studies of electron and hole transports and optical

phonon instability in nanostructure semiconductors”, presented at Chung-Yuan University on

Dec. 27, 2002.

19. “Optical studies of novel carrier transport properties in semiconductor nanostructures”,

presented at National Taiwan Normal University on Dec. 16, 2003.

20. “Optical phonon instabilities induced by drifting electrons in semiconductor nanostructures”,

presented at National Taiwan Normal University on Dec. 16, 2003.

21. “Transient novel carrier transport properties in semiconductor nanostructures”, presented at Fu-

Jen University on Dec. 18, 2003.

22. “Novel carrier transport properties in semiconductor nanostructures”, presented at National

Chia-Tung University on Dec. 19, 2003.

23. “Introduction to light scattering in semiconductor nanostructures”, presented at Fu-Jen

University on Dec. 1, 2004.

24. “Ultrafast optical studies of nitride-based semiconductors”, presented at Institute of

Optoelectronics, National Taiwan University, September 2, 2005.

25. “Ultrafast optical studies of nitride-based semiconductors”, presented at National Tsing-Hua

University, Oct. 17, 2005

26. “Ultrafast optical studies of nitride-based semiconductors”, presented at National Tong-Hwa

Univresity, Nov. 17, 2005.

27. “Ultrafast optical studies of nitride-based semiconductors”, presented at Fu-Jen university, Dec.

7, 2005,

28. “Ultrafast optical studies of nitride-based semiconductors”, presented at National Taiwan

Normal University, Nov. 23, 2005.

29. “Ultrafast optical studies of nitride-based semiconductors”, presented at National Sun-Yat sun

University, Dec. 15, 2005.

30. “Ultrafast optical studies of nitride-based semiconductors”, presented at Tamkang University,

Dec. 6, 2005.

31. “Ultrafast optical studies of nitride-based semiconductors”, presented at Institure of Physics,

Academia Sinica, Taipei, R.O.C., Nov. 15, 2005.

32. “Ultrafast optical studies of nitride-based semiconductors”, to be presented at National Ocean

University, Jan. 5, 2006.

33. “Ultrafst Raman scattering studies of electron transport in a think InN film grown on GaN”,

to be presented at SPIE Photonic West'06 International Symposium– Ultrafast

Phenomena in Semiconductors and Nanostructure Materials X (San Jose, Jan. 23, 2006).

34. “Ultrafast optical studies of nitride-based semiconductors”, presented at University of

Maryland (April, 26, 2006)

35. “Subpicosend time-resolved Raman studies of LO phonons in GaN”, presented at SPIE

Photonic West’07 Int. Conference on Gallium Nitride Materials and Devices II (San Jose,

Jan. 22, 2007).

36 “Studies of LO phonons in GaN by subpicosecond time-resolved Raman spectroscopy”,

presented at SPIE Photonic West'07 International Symposium – Ultrafast Phenomena

in Semiconductors and Nanostructure Materials XI (San Jose, Jan. 24, 2007).

37:”Inactivation of viruses with femtosecond laser pulses”, Center for Biophysics, Arizona State University

(Sept. 4, 2007).

38: “Selective inactivation of viruses with ultrashort pulsed lasers”, Center for Nanophotonics, (Arizona

State University, Tempe, Oct. 20, 2009).

39. “Photonic approach to the selective inacitation of viruses with near-infrared subpicosecond fiber

laser. SPIE Photonic West’10 International Symposium on “Optical Biopsy VIII” ( San Francisco,

CA, Jan 28, 2010).

40: “Dynamics of LO phonons in InN studied by subpicosecond time-resolved Raman spectroscopy” MRS

Symposium CC: Phonon Engineering for Enhanced Materials Solutions-Theory and Applications

(Boston, Nov. 30, 2009).

41: “Photonic approach to the selective inactivation of viruses with a near-infrared ultrashort pulsed laser”,

SPIE Photonic West’10 BIOS “Optical Biopsy VII”, (San Francisco, Jan. 25, 2010).

42: “Inactivation of encephalomyocarditis virus and herpes simplex virus by using a visible femtosecond

Laser”, (San francisco, CA Jan. 2011).

43.”Photonic approach to the selective inactivation of viruses with ultrashort pulsed lasers”, Department of

Physics, National Taiwan Normal University (May 5, 2013, Taiwan).

44. “Inactivation of viruses by femtosecond laser pulses with potential applications in bio-medicine”,

Department of Biology, National Taiwan Normal University. (May 7, 2013, Taiwan)

**Professional services:**

1. Chair of the SPIE Photonic West'98 International Symposium -- Ultrafast Phenomena in

Semiconductors II, held at San Jose, CA (Jan. 24 to 30, 1998) (with Harold R. Fetterman);

2. Chair of the SPIE Photonic West'99 International Symposium -- Ultrafast Phenomena in

Semiconductors III, held at San Jose, CA (Jan. 22 to 28,1999).

3. Chair of the SPIE Photonic West'00 International Symposium -- Ultrafast Phenomena in

Semiconductors IV, held at San Jose, CA (Jan. 23 to 29, 2000) (with Jin-Joo Song).

4. Chair of the SPIE Photonic West'01 International Symposium -- Ultrafast Phenomena in

Semiconductors V, held at San Jose, CA (Jan. 23 to 29, 2001) (with Hong-Xing Jiang and

Jin-Joo Song).

5. Chair of the SPIE Photonic West'02 International Symposium -- Ultrafast Phenomena in

Semiconductors VI, held at San Jose, CA (Jan. 23 to 29, 2002) (with Hong-Xing Jiang

and Jin-Joo Song).

6. Chair of the SPIE Photonic West'03 International Symposium -- Ultrafast Phenomena in

Semiconductors VII, held at San Jose, CA (Jan. 23 to 29, 2003) (with Hong-Xing Jiang

and Jin-Joo Song).

7. Chair of the SPIE Photonic West'04 International Symposium -- Ultrafast Phenomena in

Semiconductors and Nanostructure Materials VIII, held at San Jose, CA (Jan. 26 to

29, 2004) (with Hong-Xing Jiang and Jin-Joo Song).

8. Organizer of the Focus Session: “IR Applications of Semiconductor Nano- and

Microstructures”, in the March meeting of American Physical Society (Austin, TX, March 3-

7, 2003), (together with Unil Perera).

9. Session Chair for the Focus Session: “Optoelectronic/Laser and High Frequency Devices and

Applications”, in the March meeting of American Physical Society (Austin, TX, March 3-7,

2003).

10. Chair of the SPIE Photonic West'05 International Symposium -- Ultrafast Phenomena in

Semiconductors and Nanostructure Materials IX, held at San Jose, CA (Jan. 24 to

27, 2005) (with Hong-Xing Jiang and Jin-Joo Song).

11. Chair of the SPIE Photonic West'06 International Symposium -- Ultrafast Phenomena in

Semiconductors and Nanostructure Materials X, held at San Jose, CA (Jan. 22 to

26, 2006) (with Hong-Xing Jiang and Jin-Joo Song).

12 Chair of the SPIE Photonic West'07 International Symposium -- Ultrafast Phenomena in

Semiconductors and Nanostructure Materials XI, to be held at San Jose, CA (Jan. 22 to

25, 2007) (with Jin-Joo Song).

13. Chair of the SPIE Photonic West'08 International Symposium -- Ultrafast Phenomena in

Semiconductors and Nanostructure Materials XII, to be held at San Jose, CA (Jan. 19 to

24, 2008) (with Jin-Joo Song).

14. Chair of the SPIE Photonic West'09 International Symposium -- Ultrafast Phenomena in

Semiconductors and Nanostructure Materials XIII, to be held at San Jose, CA (Jan. 19 to

24, 2009) (with Jin-Joo Song).

15. Chair of the SPIE Photonic West'10 International Symposium -- Ultrafast Phenomena in

Semiconductors and Nanostructure Materials XIV, held at San Jose, CA (Jan. 21 to

26, 20010) (with Jin-Joo Song).

16. Chair of the SPIE Photonic West’11 Int. Sym. on "*Ultrafast Phenomena in Semiconductors and*

*Nanostructures XV*", with, M. Betz, A. Elezzabi and Jin-Joo Song (Jan 28 to Feb 3, 2011, San

Francisco, CA).

17. Chair of SPIE Photonic West’12 Int. Sym. on "*Ultrafast Phenomena in Semiconductors and*

*Nanostructures XVI*. with, M. Betz, A. Elezzabi and Jin-Joo Song (Jan 27 to Feb 2, 2012, San

Francisco, CA).

18. Chair of SPIE Photonic West’13 Int. Sym. on "*Ultrafast Phenomena in Semiconductors and*

*Nanostructures XVII*", with, M. Betz, A. Elezzabi and Jin-Joo Song (Feb 3 to Feb 6, 2013, San

Francisco, CA).

.

19 Chair of SPIE Photonic West’14 Int. Sym. on "*Ultrafast Phenomena in Semiconductors and*

*Nanostructures XVIII*", with, M. Betz, A. Elezzabi and Jin-Joo Song (Feb 1 to Feb 4, 2014, San

Francisco, CA).

**Refereed conference proceeding:**

(1) Raman probe of the Brillouin zone for non‑equilibrium phonons in GaAs. R. Bray, K.T. Tsen and K.

Wan. Proceedings of the 4th International Conference on phonon scattering in condensed matter,

University of Stuttgart, W. Germany. Edited by W. Eisenmenger, K. Lapmann and S. Dottinger,

121‑123 (1984).

(2) Raman scattering and the two‑phonon density of states in GaAs. M. Lax, V. Narayanamurti, R.C.

Fulton, R. Bray, K.T. Tsen and K. Wan. Proceedings of the 4th International Conference on phonon

scattering in condensed matter, University of Stuttgart, W. Germany. Edited by W. Eisenmenger, K.

Lapmann and S. Dottinger, 133‑135 (1984).

(3) The observation of the expansion of electron‑hole plasma in GaAs‑AlxGa1‑ xAs multiple quantum well

structures. K.T. Tsen and H. Morkoc. Proc. of the 13th Int. Symp. on Gallium Arsenide and related

compounds. Inst. Phys. Conf. Ser. No. 83: Chp. 6, 337‑342 (1987).

(4) Subpicosecond time‑resolved Raman studies of electron‑phonon and phonon‑ phonon interactions in

GaAs‑AlxGa1‑xAs multiple quantum well structures. K.T. Tsen and H. Morkoc. Proceedings of the

10th Int. Conf. on Lasers and Applications (Lasers' 87), edited by F.J. Duarte. STS press. 575‑579

(1988).

(5) Time‑resolved Raman studies in GaAs‑AlxGa1‑xAs multiple quantum well structures. K.T. Tsen,

S.‑C.Y. Tsen and H. Morkoc. Proceedings of SPIE‑ The International Society for Optical Engineering,

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