

STEPHEN W. MCKNIGHT

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EDUCATION

B.A. 1969 Oberlin College, Oberlin, Ohio
Ph.D. 1977 University of Maryland, College Park, Maryland (Experimental Solid State Physics)

POSITIONS HELD

1976-1978 Research Associate, Phys. Dept., Emory U., Atlanta, GA
1978-1980 National Research Council Post-doctoral Fellowship, Surface Physics Branch, Naval Research Lab., Wash., D.C.
1980-1985 Assistant Professor, Dept. of Physics, Northeastern U.
Summer 1984 Visiting Assistant Professor, Department of Physics, University of Maryland, College Park, Maryland
Summer 1985 Acting Project Manager, Fiber Optic Power Transmission Program, Geo-Centers Inc., Newton, MA
1985-1988 Senior Scientist, Center for Electromagnetics Research, and Adjunct Professor, Dept. of Electrical and Computer Engineering, Northeastern University
1988-2000 Associate Professor, Dept. of Electrical and Computer Engineering, Northeastern University
1992-2000 Associate Director, Center for Electromagnetics Research
2000-present Education Thrust Leader, Engineering Research Center for Subsurface Sensing and Imaging Systems
2001-present Professor of Electrical and Computer Engineering, Northeastern University
July 2004-2005 Interim Chair of the Department of Electrical and Computer Engineering, Northeastern University

FIELD OF SPECIALIZATION

Experimental Materials Research - Submillimeter, Infrared, and Optical Properties of Solids

RESEARCH EXPERIENCE

Spectroscopy from millimeter-wave to the vacuum-ultraviolet; transport measurements: conductivity, Hall, and magneto-resistance; cryogenics; UHV; high pressure; film evaporation; cathodoluminescence; non-destructive characterization of thin films and interfaces; fiber optic power transmission and photovoltaic conversion; computer programming and interfacing.
Materials studied included semiconductors; II-VI, IV-VI and III-V material; metals: A-15

superconductors, metallic glasses, magnetic and multilayered material; insulating films on semiconductors: SiO₂ on Si, Si₃N₄ on Si, anodic oxide on GaAs.

RESEARCH INTERESTS

Optical characterization and phenomena, semiconductors, amorphous and magnetic materials, interfaces, novel materials preparation, far-infrared and millimeter-wave materials, vacuum microelectronic devices, short-pulse spectroscopy of ultra-wide-band materials, subsurface detection.

RESEARCH AND PROFESSIONAL ACTIVITIES

Member, Steering Committee, IEEE-MTT International Microwave Symposium, Boston, 2000.

Co-Chair, Student Paper Competition, IEEE-MTT International Microwave Symposium, Boston, 2000.

Member of Executive Committee, Engineering Research Center for Subsurface Sensing and Imaging Systems. 2000-present.

Guest co-editor, special issues on Barrier to Subsurface Sensing, Subsurface Sensing Technologies and Applications: An International Journal, Vol. 4, No. 4, October, 2003.

EDUCATIONAL ACTIVITIES AND UNIVERSITY SERVICE

As the Education Thrust Leader of CenSSIS, Prof. McKnight is charged with implementing a CenSSIS education program of his conception that was judged as “outstanding...a model of what one might hope an ERC can provide” by the NSF reviewers and site visitors. In 1998, he created an Industry/Undergraduate Research Opportunity Program (I/UROP) at Northeastern which allows undergraduates to work in faculty research projects on topics linked to the students’ cooperative education placements, with stipends paid for by the students’ co-op employers. In 2000, he began work on a program to teach computing skills to engineering freshmen in a hands-on, interactive “High-Tech Tools and Toys Laboratory.” This new course was piloted in Winter, 2001, and taught every year since then as a part of the freshman engineering program at Northeastern. The High-Tech Tools and Toys concept and materials were also used in a freshman module at Boston University and is being disseminated throughout the CenSSIS universities.

Other educational programs developed by Prof. McKnight include a freshman MATLAB/EXCEL computing course “Engineering Problem Solving with Applications Software” for which he developed the materials from 1994 to 1999, and graduate courses in “Optical Properties of Materials” (taught in 1997 and 1999) and “Optical Detection” (co-taught in 2004). In 1996 he was the PI on a DARPA MAFET-funded summer internship program at M/A-COM for physics majors from Morehouse College, an Historically Black College or University (HBCU). Prof. McKnight mentored the students in microwave engineering topics during twice-weekly visits to M/A-COM allowing them to achieve significant results, including a publication by one student on HBT thermal resistance in *Microwaves and RF* (Feb 1997, p55).

As Chair of the ECE Undergraduate Study Committee from 1993-1996, Prof. McKnight directed the first major revision of the ECE undergraduate curriculum in ten years, and, serving again as Chair in 1999-2000, he organized the department’s preparation for the ABET accreditation visit scheduled in Fall 2001. At the college level, he served on the College ABET Engineering Curriculum 2000 Committee and assisted in the planning and development of a new series of courses for engineering freshmen. He served on a committee to develop the Academic Common Experience, a university-wide set of outcomes-based educational goals, and as a College of Engineering

representative on the Faculty Senate, he served on the Senate Agenda Committee and three times was elected Secretary of the Faculty Senate.

In April, 2004, Prof. McKnight was selected by a department search committee to serve as the Interim Chair of the Department of Electrical and Computer Engineering, a position he has held since July 1, 2004.

SOCIETIES

The American Physical Society

Society of Photo-Optical Instrumentation Engineers (1981-1983)

IEEE (Society on Magnetics, Society on MTT)

American Society of Engineering Education

GRANTS AND CONTRACTS AWARDED OR PENDING

1. Research Corporation, "Optical Properties of Metallic Glasses and Ultra-thin Metallic Film" (1981-87), \$7,500.
2. Northeastern University Research and Scholarship Development Fund, "Optical Studies of Metallic Glasses" (1981-1983), \$2,875.
3. Office of Naval Research, "High Pressure Studies of Narrow-Gap Semiconductors" (1980)-1982), \$85,000.
4. Office of Naval Research, "High Pressure Studies of Narrow-Gap Semiconductors" (Renewal, 1983), \$45,000.
5. Air Force Office of Scientific Research, "Electronic Properties of Intercalated Graphite and Amorphous Metals", with R.S. Markiewicz and C.L. Tsai (1982-1984), \$329,409.
6. Office of Naval Research, "High Pressure Far-Infrared Spectroscopy and Photoconductivity of Narrow-gap Semiconductors", (1984-1986), \$105,000.
7. Office of Naval Research, "Optical Characterization of Material for Infrared Detection and Submillimeter Wave Device" (5/86-11/87), \$93,308.
8. Office of Naval Research, "Far Infrared Studies of Magnetic Rare Earth-Transition Metal Alloys", (11/87-7/89) \$60,000.
9. Charles Stark Draper Laboratory, "Magneto-optical Kerr Effect in Magnetic Films for Optical Sensor Applications," (7/90-6/91) with C. Vittoria, C. DiMarzio, and S. Oliver. \$75,000.
10. Varian Associates subcontract on proposal to Air Force Wright-Patterson Development Center, "Vacuum Triode Demonstration" (7/90-6/91) with N. McGruer and C. Chan. \$219,488.
11. Charles Stark Draper Labs, "Demonstration of Magnetic Field Sensing with Resonant Ring Optical Cavity," (6/91-9/91) with S. Oliver, C. DiMarzio, and C. Vittoria. \$9,000.
12. Charles Stark Draper Labs, "Magneto-optical Kerr Effect in Magnetic Films for Optical Sensor Applications," (10/91-6/92) with S. Oliver and C. Vittoria, and C. DiMarzio. \$60,000.
13. Army Advanced Concepts and Technology Committee, "Vacuum Microelectronic Devices", with N. McGruer and A. Johnson. (6/92-6/94). \$412,000.
14. ARPA Technology Reinvestment Program, "A Consortium for Electromagnetics Research Applications", with M. Silevitch, C. DiMarzio, C. Rappaport, and P. Leventman. (6/94-6/97). \$1,200,000.

15. GTE Foundation Grant: "Electromagnetic Scattering Modeling for Wireless Communication," with Harold Raemer, Jim Preisig and David Brady. (7/96-6/95). \$50,000.
16. ONR MURI Program: "Monolithic, High-Frequency Single-Crystal Ferrite Materials and Devices," with C. Vittoria, S. Oliver, N. McGruer, P. Zavracky. (9/96-9/01) \$2,700,000.
17. ONR MURI Program: "An Integrated Approach to Detection, Localization, and Classification of Mines" with C. Rappaport, A. J. Devaney, E. Miller, C. DiMarzio, H. Raemer, et al. (1/97-1/01) \$2,995,000.
18. "High-Resolution Sensing and Imaging Systems Center," proposal to the TRW Fund of the Cleveland Foundation, with S. Oliver, M. Silevitch. Funded for \$25,000.

INVITED PAPERS, SEMINARS, and PROFESSIONAL PRESENTATIONS

1. "Cyclotron-Resonance in PbTe", Seminar, Emory University, July 1976.
2. "Semiconductor Cyclotron Resonance", Colloquium, Emory U., March 1977.
3. "Far-Infrared Magneto-optical Effects in Semiconducting PbTe", Seminar, U. Of Maryland, January 1978.
4. "Cathodoluminescence of SiO₂ and GaAs Oxide", Seminar General Electric Research Lab, Schenectedy, NY, Oct. 1979.
5. "Cathodoluminescence of SiO₂ and GaAs Oxides", seminar, Syracuse Univ., Syracuse, NY, Feb. 1980.
6. "Magneto-optical Studies of PbTe in the Far-Infrared", Seminar, Northeastern University, Boston, MA, March 1980.
7. "Electron-Beam-Induced Luminescence of Amorphous Semiconductor Oxides", Seminar, Optical Properties Branch, Naval Research Lab., April 1980.
8. "Cathodoluminescence Studies of Semiconductor-Oxide Interfaces" Conference on Optical Characterization Techniques for Semiconductor Technology, San Jose, CA, April 1981.
9. "Electron Beam Induced Luminescence of Amorphous Insulators", Northeastern University Journal Club, Oct. 1982.
10. "Far-Infrared High-Pressure Studies of Narrow-gap Semiconductors", Seminar, Naval Surface Weapons Center, White Oak, MD, Oct. 1982.
11. "Infrared Optical Properties of Amorphous Metals", Seminar, U. of Connecticut, Storrs, CT, April 1983.
12. "Characterization of Infrared Detector Materials by Far-Infrared Spectroscopy", Seminar for Department of Electrical Engineering, Northeastern University, April, 1985.
13. "Far-Infrared High-pressure Spectroscopy of Infrared Detector Materials", Honeywell Electro-optics Div., Lexington, MA, April 1985.
14. "Photoconductivity Studies of Ultra-Sensitive Infrared Detector Materials", presentation to Center for Electromagnetic Research Industry Advisory Board Meeting, Jan. 1986 (printed in CER Prospectus).
15. "Optical Studies of Gaseous Etching", presentation to CER IAB Meeting, Jan. 1986 (printed in CER Prospectus) with C. Chan.

16. "Ultrasensitive Infrared Detector Materials", presentation to CER IAB Meeting, June 1986 (printed in CER Research Reports).
17. "Ultrasensitive Infrared Detector Materials", presentation to CER IAB Meeting, Jan. 1987 (printed in CER Research Reports).
18. "Research in Microwave Materials", presentation to CER IAB Meeting, June 1987 (printed in CER Research Reports) with W. Nowak, S. Oliver, J. Ryu, and C. Vittoria.
19. "Research in Microwave Materials", presentation to CER IAB Meeting, May and November 1988, May 1989 (printed in CER Research Reports) with C. Vittoria and S. Oliver.
20. "Optical Technique in Microwave Technology," presentation to CER IAB Meeting, May 1990 (printed in CER Research Reports) with C. DiMarzio.
21. "Optical Technique in Microwave Technology," presentation to CER IAB Meeting, November 1990 (printed in CER Research Reports) with C. DiMarzio.
22. "Demonstration of Magneto-optical Magnetic Field Sensing with Optical Resonance Cavity," presentation at Charles Stark Draper Lab, Sept. 1991.
23. "Soft Magnetic Films for Magneto-optical Magnetic-Field Sensor Applications," Weber Research Institute Seminar, Polytechnic University, March 1992.
24. "A Design for a Resonant Vacuum Microelectronic Microstrip Amplifier at 10 and 60 GHz", presented to the Sixth International Vacuum Microelectronics Conference, Newport, RI, July 1993.
25. "Picosecond-Pulse and Millimeter-Wave Spectroscopy of Barium Ferrite", seminar delivered at Raytheon Research Division, October, 1993.
26. "Wide-Band Materials Research," presentation to CER Industrial Advisory Board, May 1993.
27. "Wide-Band Materials Research," presentation to CER Industrial Advisory Board, November 1993.
28. "Picosecond-pulse and millimeter-wave spectroscopy of barium and strontium ferrite," S. W. McKnight, L. Carin, C. Vittoria, S. F. Wahid, and D. Kralj, poster presentation at the Second International Conference on Ultra-Wideband Short-Pulse Electromagnetics, Brooklyn, NY, April 1995.
29. "Performance Limits and Applications Potential of Monolithic YIG-Film Circulators on Semiconductor Substrates," seminar delivered at M/A-COM, Lowell, January 23, 1997.
30. "Monolithically Integrated Ferrite Device Technology," International Microwave Symposium

Workshop Presentation, 1998 IEEE MTT-S International Microwave Symposium, Baltimore, MD, June 8, 1998.

31. "ARO Multi-University Research Initiative (MURI): Northeastern University," invited presentation at National Defense Industrial Association Symposium and Exhibition: *Mines, Countermine & Demolitions*, Coeur d'Alene, ID, Sept 29, 1998.

32. "Laser-Induced Acoustic Imaging for Humanitarian De-Mining," invited seminar at Columbia University Department of Applied Physics, March, 2001.

ABSTRACTS and CONTRIBUTED PAPERS

1. S. W. McKnight and H.D. Drew, "Far Infrared Studies of p-type PbTe", Bull. Am. Phys. Soc., 21, 251 (1976) (APS Meeting, Atlanta, GA, March 1976.)
2. S.W. McKnight and H.D. Drew, "Far Infrared Magneto-Optical Studies in PbTe-Band Structure", Bull. Am Phys. Soc., 22, 473 (1977) (APS Meeting, San Diego, CA, March 1977).
3. S.W. McKnight, P.M. Amirtharaj and S. Perkowitz, "Far Infrared Reflectivity of PbSnSe", Bull. Am. Phys. Soc., 22, 473 (1977) (APS Meeting, San Diego, CA, March 1977).
4. S.W. McKnight, R.H. Thorland and S. Perkowitz, "Far Infrared Properties of Thin Film High Temperature Superconductors", Bull. Am. Phys. Soc. 22, 288 (1977) (APS Meeting, San Diego, CA, March, 1977).
5. S.W. McKnight, B.L. Bean and S. Perkowitz, "Submillimeter Laser Measurements in Superconducting V₃Si", Bull. AM. Phys. Soc., 23, 307 (1978) (APS Meeting, Washington, DC, March 1978).
6. B.L. Bean, S.W. McKnight and S. Perkowitz, "Submillimeter Laser Spectroscopy of High Temperature Superconductors", Conference Digest, Third International Conference on Submillimeter Waves and Their Applications, Guilford, England (March 1978).
7. S.W. McKnight and E.D. Palik, "Cathodoluminescence of Thermal and Native Oxides on Si", Bull. Am. Phys. Soc., 24, 586 (1979). (APS Meeting, Washington, DC, April 1979).
8. "Sub-Band-Gap Cathodoluminescence in Amorphous SiO₂ and Si₃N₄ Films", S.W. McKnight and E.D. Palik, 5th University Conference on Glass Science: Electrical, Magnetic and Optical Properties of Glasses, Troy, NY, August 1979.
9. "Cathodoluminescence Studies of Anodic Oxides on GaAs", S.W. McKnight, E.D. Palik and T.N. Bhar, 7th Annual Conf. on the Physics of Compound Semiconductor Interfaces, Estes Park, CO, Jan. 1980.
10. S.W. McKnight, R.T. Holm and E.D. Palik, "Multiple-Reflection Effects in Cathodoluminescence Studies of Thin SiO₂ Films on Si Substrates", Bull. Am. Phys. Soc., 25, 265 (1980) (APS Meeting, New York, NY, March 1980).
11. "Electron-beam-induced Luminescence in SiO₂ Films", S.W. McKnight, International Topical Conf. on the Physics of MOS Insulators, Raleigh, NC, June 1980.
12. "Electron-beam Induced Luminescence in Amorphous As₂S₃ and SiO₂", S.W. McKnight, Bull. Am. Phys. Soc., 26, 250 (1981).
13. M.K. El-Rayess and S.W. McKnight, "High-Pressure Far-Infrared Studies of PbTe and HgTe",

Bull. Am. Phys. Soc. 27, 367 (1982) (APS Meeting, Dallas, TX, March 1982).

14. M.K. El-Rayess and S.W. McKnight, "Far-Infrared Reflectivity of HgTe Under Hydrostatic Pressure", Bull. Am. Phys. Soc. 28, 283 (1983) (APS Meeting, Los Angeles, CA, March 1983).

15. A. Ibrahim and S.W. McKnight, "Optical Properties of Amorphous Ni-P Alloys", Bull. Am. Phys. Soc., 28, 484 (1983) (APS Meeting, Los Angeles, CA, March 1983).

16. "Drude Optical Properties of Amorphous Nickel-Phosphorus Alloys", S.W. McKnight and A. K. Ibrahim, 5th International Conference on Liquid and Amorphous Metals, Los Angeles, CA, Aug. 1983.

17. "Effect of Temperature and Hydrostatic Pressure on the Far-Infrared Spectra of Indium-doped PbSnTe", M.K. El-Rayess and S.W. McKnight, Bull. Am. Phys. Soc. 29, 305 (1984) (APS Meeting, Detroit, March 1984).

18. "Galvanomagnetic Properties of Ni-P Amorphous Alloys", A.K. Ibrahim and S.W. McKnight, Bull. Am. Phys. Soc. 29, 360 (1984) (APS Meeting, Detroit, March 1984).

19. "Pressure Dependence of the Transverse Optical Phonon in PbTe", S.W. McKnight and M.K. El-Rayess, Bull. Am. Phys. Soc. 29, 360 (1984) (APS Meeting, Detroit, March 1984).

20. "Infrared Properties of La-Al Metallic Glasses", S.W. McKnight, A.K. Ibrahim and C.L. Tsai, March APS Meeting, Detroit (Bull. Am. Phys. Soc. 29, 361 (1984)).

21. S.W. McKnight and M.K. El-Rayess, "High-Pressure Far-Infrared Studies of PbTe and In-doped PbSnTe", International Conference on the Physics of Semiconductors, San Francisco, August 1984.

22. "Wavelength-independent Anti-interference Coating for the Far-infrared", S.W. McKnight, K.P. Stewart, H.D. Drew, and K. Moorjani, Bull. Am. Phys. Soc. 30, 278 (1985) (APS Meeting, Baltimore, March 1985).

23. "Infrared Conductivity of Amorphous Cu-Zr Films", S.A. Oliver, S.W. McKnight and R.C. Cammarata, Bull. Am. Phys. Soc. 30, 528 (1985) (APS Meeting, Baltimore, March 1985).

24. "Configuration-coordinate Model for the Persistent Photoconductivity of Indium-doped $Pb_{1-x}Sn_xTe$ ", B. Maheswaran, M.K. El-Rayess, and S.W. McKnight, Bull. Am. Phys. Soc. 30, 576 (1985) (APS Meeting, Baltimore, March 1985).

25. "Wavelength Dependent Studies of Persistent Photoconductivity in Indium-doped $Pb_{1-x}Sn_xTe$ ", S.W. McKnight and M.K. El-Rayess, Bull. Am. Phys. Soc. 31, 399 (1986) (APS Meeting, Las Vegas, NV, March 1986).

26. "Infrared Relectivity of $CeCu_6$ ", S.A. Oliver, S.W. McKnight, A.L. Giorgi, and G.R. Stewart, Bull. Am. Phys. Soc. 31, 343 (1986) (APS Meeting, Las Vegas, NV, March 1986).

27. "Effect of Hydrostatic Pressure on the Antiferromagnetic Resonance in NiO", M.K. El-Rayess,

S.W. McKnight and C.H. Perry, *Bull. Am. Phys. Soc.* 32, 486 (1987) (APS Meeting, New York, NY, March 1987).

28. "Hall Effect in Amorphous Ni-P Alloys", S.W. McKnight, A.K. Ibrahim, A. Bansil and S.N. Khanna, *Bull. Am. Phys. Soc.* 32, 549 (1987) (APS Meeting, New York, NY, March 1987).

29. "Ferromagnetic Resonance in Magnetic Multilayer Structures" S.W. McKnight and C. Vittoria, *Bull. Am. Phys. Soc.* 33, 392 (1988) (APS Meeting, New Orleans, LA, March 1988).

30. "Wavelength Dependence of Persistent Photoconductivity in In-Doped PbSnTe" S.W. McKnight and M.K. El-Rayess, *International Conference on the Physics of Narrow-Gap Semiconductors*, Gaitlersburg, MD 1989.

31. "Selection of Optimal Angles for Inversion of Multiple-angle Ellipsometry and Reflectometry Equations," presented as Postdeadline Session of 1990 Optical Society of America meeting in Boston, with W. Weedon and A. J. Devaney.

32. "A Design for a Resonant Vacuum Microelectronic Microstrip Amplifier at 10 and 60 GHz", Abstract for Sixth International Vacuum Microelectronics Conference, Newport, RI, July 1993.

30. "Effective-Field Theory for Ferrite Thin-Film Junction Circulator," H. How, S. W. McKnight, and C. Vittoria, Abstract to the IEEE-MTT International Microwave Symposium, Denver, June 8-13, 1997.

31. "Monolithically Integrated Ferrite Device Technology," S. W. McKnight, C. Vittoria, S. A. Oliver, H. How, N. E. McGruer, P. M. Zavracky, R. Schmidt, D. P. Vu, *International Microwave Symposium Workshop, 1998 IEEE MTT-S International Microwave Symposium*, Baltimore, MD, June 8, 1998.

32. "Laser-Induced Acoustic Detection of Buried Objects," S. W. McKnight, C. DiMarzio, W. Li, D. O. Hogenboom, G. Sauermann, *12th Annual International Symposium on Aerospace/Defense Sensing, Simulation, and Controls*, Orlando, FL, April 13-17, 1998.

33. "Imaging of Buried Objects by Laser-Induced Acoustic Detection" S. W. McKnight, W. Li, C. DiMarzio, *13th Annual International Symposium on Aerospace/Defense Sensing, Simulation, and Controls*, Orlando, FL, April 13-17, 1999.

41. "Laser-induced Acoustic Generation for Buried Object Detection," S. W. McKnight, C. A. DiMarzio, W. Li, and R. A. Roy, *Proceedings of the SPIE*, Vol. 4038, *Detection and Remediation for Mines and Minelike Targets V*, p734-739(2000).

43. "A Unified Discipline of Subsurface Sensing and Imaging Systems," M. B. Silevitch, S. W. McKnight, and C. Rappaport, *Subsurface Sensing Technologies and Applications*, **Vol. 1, p.1-21** (2000).

44. "Laser-Induced Acoustic Imaging of Buried Objects," S. W. McKnight, C. A. DiMarzio, W. Li, and J. Stott, *Journal of Subsurface Sensing Technologies and Applications*, **Vol. 2**, No. 2, pp. 119-126, April 2001.
45. "Laser-induced acoustic imaging of buried land mines: experiment and modeling," S. W. McKnight, J. Stott, C. A. DiMarzio, R. Cleveland, and R. Roy, *Proceedings of the SPIE*, Vol. 4394, Detection and Remediation for Mines and Minelike Targets VI, p627-633(2001).
46. "Multi-mode Subsurface Sensing and Imaging for Land Mine Detection," C. M. Rappaport, M. Silevitch, S. W. McKnight, C. DiMarzio, E. Miller, and H. Raemer, *Proceedings of the SPIE*, Vol. 4129, *Subsurface Sensing Technologies and Applications II*, Cam Nyugen, Ed., p2-10(2000).

PUBLICATIONS

1. S.W. McKnight, R.H. Thorland and S. Perkowitz, "Far Infrared Behavior of Thin Film High Temperature Superconductors", *Thin Solid Films* **41**, L61 (1977).
2. S.W. McKnight, P.M. Amirtharaj and S. Perkowitz, "Far Infrared Studies of Lattice and Free Carrier Effects In $\text{Hg}_{1-x}\text{Mn}_x\text{Te}$ ", *Solid State Commun.* **25**, 357 (1978).
3. S.W. McKnight, P.M. Amirtharaj, and S. Perkowitz, "Far Infrared Interband Absorption in $\text{Hg}_{1-x}\text{Mn}_x\text{Te}$ ", *Infrared Physics* **18**, 919 (1978).
4. S.W. McKnight, B.L. Bean and S. Perkowitz, "Far-Infrared Laser Spectroscopy of V_3Si ", *Phys. Rev.* **B19**, 1437 (1979).
5. S.W. McKnight, S. Perkowitz, D. Tanner and L.R. Testardi, "Far-Infrared Measurements of Holstein Processes and Low Energy $a_2F(w)$ Structure in V_3Si ", *Phys. Rev.* **B19**, 5689 (1979).
6. S.W. McKnight and H.D. Drew, "Far-Infrared Cyclotron Resonance in PbTe ", *Phys. Rev.* **B21**, 3447 (1980).
7. S.W. McKnight, D.E. Palik, "Cathodoluminescence of SiO_2 Films", *J. Non-Cryst. Solids* **40**, 595 (1980).
8. S.W. McKnight, E.D. Palik and T. Bahr, "Cathodoluminescence Studies of Anodic Oxides on GaAs ", *J. Vac. Sci. Technol.* **17**, 967 (1980).
9. S.W. McKnight, "Electron-beam Induced Luminescence in SiO_2 ", in *The Physics of MOS Insulators*, ed. G. Lucovsky, S.T. Pantelides, and F.L. Galeener, 137 (1980).
10. S.W. McKnight and H.D. Drew, "Breakdown of Screening in Voigt Cyclotron Resonance", *J. Physics C* **14**, 5367 (1981).
11. S.W. McKnight, "Cathodoluminescence Studies of Semiconductor-Oxide Interfaces", *SPIE*, **Vol. 276**, 39 (1981).
12. R.T. Holm, S.W. McKnight, E.D. Palik and W. Lukosz, "Interference Effects in Luminescence Studies of Thin Films", *Applied Optics* **21**, 2512 (1982).
13. S.W. McKnight and H.D. Drew, "Evidence for Shallow Bound States in PbTe : A Reply", *Phys. Rev.* **B28**, 2249 (1983).
14. S.W. McKnight and A. Ibrahim, "Determination of Transport Parameters for Amorphous Ni-P by Infrared Reflectivity and Hall Measurements", *J. Non-Crystall. Solids* **61/62**, 1301 (1984).
15. S.W. McKnight and M.K. El Rayess, "Far-Infrared Reflectivity of Indium-Doped $\text{Pb}_{1-x}\text{Sn}_x\text{Te}$ ", *Solid State Comm.* **49**, 1001 (1984).

16. S.W. McKnight and A.K. Ibrahim, "Infrared Optical Properties of Amorphous Ni-P Alloys", *Phys. Rev.* **B29**, 6570 (1984).
17. S.W. McKnight and M.K. El-Rayess, "High-Pressure Far-Infrared Properties of Indium-Doped Pb_{1-x}Sn_xTe", *J. Phys. C: Solid State Phys.* **17**, 6893 (1984).
18. S.N. Khanna, A.K. Ibrahim, S.W. McKnight and A. Bansil, "D-Band Filling in Ni-P Metallic Glasses", *Solid State Comm.* **55**, 223 (1985).
19. S.W. McKnight and M.K. El-Rayess, "High-Pressure Far-Infrared Spectroscopy of PbTe and In-doped PbSnTe," *Proceedings of the 17th International Conference on the Physics of Semiconductors, San Francisco*, ed. J.D. Chadi and W.A. Harrison (Springer-Verlag, New York, 1985) p. 1389.
20. S.W. McKnight and M.K. El-Rayess, "Effect of Hydrostatic Pressure on the HgTe Optical Phonon", *Solid State Comm.* **54**, 433 (1985).
21. S.W. McKnight, A.K. Ibrahim, A. Bansil and S.N. Khanna, "The Hall Effect in Amorphous Ni-P Alloys", *J. Phys. F: Metals Physics* **17**, 1167 (1987).
22. S.W. McKnight, K.P. Stewart, H.D. Drew, and K. Moorjani, "Wavelength-independent Anti-interference Coating for the Far-infrared", *Infrared Physics* **27**, 327 (1987).
23. S.W. McKnight and C. Vittoria, "Ferromagnetic Resonance in Magnetic Multi-layer Structures", *Phys. Rev.* **B36**, 8574(1987).
24. Jiqing Xia, S.W. McKnight, C. Vittoria, "Propagation Losses in Dielectric Image Guides", *IEEE Trans. MTT* **36**, 155 (1988).
25. F. Zayek, S.W. McKnight, C. Vittoria, W. Maisch, and G. Stauss, "Effects of Magnetic Relaxation Times on Electromagnetic Pulse Shielding", *IEEE Trans. Mag.* **24**, 2114 (1988).
26. R. Zayek, S.W. McKnight, C. Vittoria, V.Folen, and W. Maisch, "Effects of Magnetic Relaxation Times on the Shielding of a Polarized Electromagnetic Pulse", *J. of Applied Physics* **65**, 2803 (1989).
27. S.W. McKnight and M.K. El-Rayess, "Wavelength Dependence of Persistent Photoconductivity in Indium-doped PbSnTe", *Semicond. Sci. Technol.* **5**, S155(1990).
28. E. Ekholm and S.W. McKnight, "Attenuation and Dispersion for High-Tc Superconducting Microstripline", *IEEE Trans. MTT* **38**, 387(1990).
29. "Prospects for a 1 THz vacuum microelectronic microstrip amplifier," *IEEE Trans. Electron Devices* **38**, 666(1991), N. McGruer, A. Johnson, S.W. McKnight, W. Schwab, C. Chan, and S. Tong.

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