

## **DR. DAVID G. SEILER**

Currently an Associate at NIST (Retired NIST 12/31/2020)

Nanoscale Device Characterization Division

Physical Measurement Laboratory

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### **Summary:**

*Dynamic, innovative abilities demonstrated in over 40 years of research in the semiconductor field, with over 30 years R & D management/leadership experience. Broad range of technical expertise coupled with highly effective communication skills. Excellent record of achievement with an outstanding reputation as an organizer and leader.*

### **Major Career Accomplishments:**

#### **Leadership/Managerial Achievements:**

- Served as Chief of Staff of the NIST Physical Measurements Laboratory from 2017 to 2020. Provided leadership on complex assignments and internal program issues.
- Managed and innovatively led Groups (as a Group Leader) and Divisions (as a Division Chief) at NIST with as many as 78 staff, 90 Associates, and 20 summer students with annual budgets as much as \$25M from 1988 to 2017.
- Led and directed NIST studies for NOAA's GOES-I or Goes-8 weather satellite program from 1991 to 1994. Spearheaded the response to NASA/NOAA and provided recommendations upon which a proposed weather satellite launch was postponed to avoid premature HgCdTe sensor failures in the satellite. NOAA has the responsibility for producing, launching, and operating a multiple Geostationary Operational Environmental Satellite (GOES) System. The primary purpose of the GOES Program is the continuous and reliable collection of environmental data in support of weather forecasting and related services. Worked with industry to have new sensors installed. A successful launch was achieved in 1994.
- Served as a program director for Solid State Physics in the Materials Research Division at the National Science Foundation (NSF) during 1985-86. Co-managed a budget of \$11 million, reviewed and evaluated research proposals to determine their feasibility and technical excellence. In the course of this work, selected which proposals to fund and negotiated budgets. Interacted with scientists and administrators not only at NSF, but also at various institutions across the United States. Participated in numerous site visits across the country to evaluate research programs for the NSF Solid State Physics Program and the NSF Materials Research Laboratories/Materials Research Groups.
- Initiated a new conference series in 1995 to address the measurement needs of the semiconductor industry. Became the chief organizer and conference co-chair and co-editor of the proceedings. Due to the conference's overwhelming success, eleven subsequent entries in the series were held from 1998 to 2019. The series has featured keynote talks from such industry giants as Craig Barrett (then president of Intel), Mark Melliard-Smith (then president and CEO of SEMATECH), Dennis Buss (then VP, Texas Instruments), Mark Durcan (COO of Micron), Michel Brillouet (VP, CEA-LETI), and Mike Mayberry (VP, Intel). Dan Hutcheson (VLSI Research) stated in his January 11, 2007, issue of "The Chip Insider" that "if you want to meet, greet, and learn from the world's experts in metrology, this is the place to be."
- Initiated Xerox model for the NIST's Semiconductor Electronics Division's Strategic Planning Process. Sponsored a planning retreat in 1996, resulting in the development and adoption of the

mission, vision, values, and goals for the Division. Continued strong emphasis on strategic planning for the Division in subsequent years.

- Selected as the NIST Governing Council representative to the Nanoelectronics Research Initiative (NRI) from 2007 to 2017. The NRI is a model for industry-driven consortia seeking a new paradigm of beyond CMOS devices. It funds a highly leveraged, coordinated nanoelectronics research program centered at leading universities in partnership with federal and state government agencies. In addition to industry support, NRI research was funded by NIST, NSF, universities, and state/local governments.

### Key Research Achievements:

- Pioneered advancement of sensitive quantum transport measurements using ac magnetic field modulation techniques for improving sensitivity and usefulness of Shubnikov-de Haas Effect (oscillatory magnetoresistance) to characterize bulk and artificially structured semiconductors. Advanced the interpretation and analysis of data to extract energy band structure information (effective mass, Fermi surface anisotropy related to warping and inversion asymmetry splitting in GaSb, HgSe, and InSb). Authored the first and only comprehensive (550 references) review of the Shubnikov-de Haas (SdH) Effect that was published as a book chapter in 1991. Developed in 1976 a new experimental technique to acquire Shubnikov-de Haas data and extract parameters in semiconductors subjected to high electric fields and laser-induced heating conditions. Made the first determination of deformation potentials in HgSe by using uniaxial stress and the SdH effect. Achieved the first experimental proof of  $\Gamma_8$  conduction band symmetry of HgSe in 1971, which confirmed the theoretically predicted inverted energy band structure.
- Pioneered the development and use of two-photon (nonlinear) spectroscopy in high magnetic fields. (1) Determined the most accurate set of band parameters for the A- and B-free excitons in CdS. For the B-free exciton, several parameters were determined for the first time. Published definitive papers in 1982 and 1983. (2) Observed the first two-photon absorption effects (in any solid material) using only cw lasers in InSb, at a very low laser intensity of 1 W/cm<sup>2</sup>. Most accurate determination of the temperature dependence of the energy gap of InSb made from 2 K to 210 K in 1985. (3) First observed and interpreted two-photon magneto-absorption effects in Hg<sub>1-x</sub>Cd<sub>x</sub>Te in 1988. Made the most accurate determination of the energy gap,  $E_g$ , and measured the nonlinear temperature dependence of  $E_g$  below 77 K and deduced a new, more accurate relationship for  $E_g(x, T)$  in 1989. (4) A later seminal paper by D. G. Seiler, E. Heiman, R. Feigenblatt, R. L. Aggarwal, and B. Lax, "Two-Photon Spectroscopy of GaAs," J. Appl. Phys. 57, 2191 (1985) was reprinted in **Key Papers in Physics: Gallium Arsenide** (American Institute of Physics, New York, 1987), J. S. Blakemore, Editor.
- An extensive study was carried out for NOAA to improve the characterization and evaluation measurements for HgCdTe detector materials, processes, and devices used on the GOES and TIROS satellites. Comprehensive results reported in a NIST Special Publication 400 94 (April 1994) report by Seiler, D. G., Lowney, J. R., Thurber, W. R., Kopanski, J. J., and Harman, G. G., titled Semiconductor Measurement Technology: Improved Characterization and Evaluation Measurements for HgCdTe Detector Materials, Processes and Devices Used on the GOES and TIROS Satellites. Experiments and theoretical models were carried out on heavily accumulated surfaces of HgCdTe detectors that provided the first observation and new basis for characterizing the passivation processes affecting the detector performance. See Lowney, J. R., Seiler, D. G., Thurber, W. T., Yu, Z., Song, X. N., and Littler, C. L., Heavily Accumulated Surfaces of Mercury Cadmium Telluride Detectors: Theory and Experiment, J. Electron. Mat. 22 (8), 985 991 (July 1993).

### Key Professional Contributions:

- **Organized and chaired 15 major international conferences and/or workshops:** "Hot Electrons in Semiconductors" in 1977; "Narrow Gap Semiconductors" in 1989; "HgCdTe Characterization International Workshop" in 1992; "International Workshop on Semiconductor Characterization: Present Status and Future Needs" in 1995; "The International Conference on Materials and Process

Characterization for VLSI” in 1997; “The International Conference on Characterization and Metrology for ULSI Technology” in 1998, 2000, 2003, and 2005; and “Frontiers of Characterization and Metrology for Nanoelectronics” in 2007, 2009, 2011, 2013, 2015, 2017, and 2019.

- Extensive contributions toward the Semiconductor Industry Association's **National Technology Roadmap for Semiconductors (NTRS)** in 1991, 1994, and 1997, as well as the **International Technology Roadmap for Semiconductors (ITRS)** in 1999, 2001, 2003, 2005, 2007, 2009, 2011, 2012, 2013, 2014, and 2015.
- **Consultant and member of the “Blue Ribbon” GOES Assessment Panel**, formed by the National Oceanic and Atmospheric Administration (NOAA) for the GOES Program. Served as member of a Detector Degradation Task Consultant Team (1990-91) and GOES Program Assessment Panel (1991). Principal investigator for a HgCdTe Detector Reliability Study for the GOES Program (1991). Briefings were given to Department of Commerce and NOAA personnel as well as Office of Management and Budget.
- Planned, initiated, analyzed, and published two **extensive industrial surveys**, “HgCdTe Characterization Measurements” and “Optical Characterization Measurements,” to determine industrial measurement and standard’s needs. Results published in 1993 and 1995 and disseminated to the respective communities.
- **Chairman and Vice Chairman of the Infrared Materials Specialty Group (IMSG) of the Infrared Information Symposium (or IRIS) from 1990-95.** IRIS works with both the Department of Defense and NASA to sponsor meetings that provide forums where representatives of industry, government, and academic organizations can present, discuss, explore, and evaluate improvements in the quality of infrared materials and in the capability of infrared detectors. Novel formats for the meeting presentations were developed and adopted.
- Asked to lead two sub-panels staffed by multi-agency government personnel in scoring, ranking, and selecting highly qualified proposals for funding in the Manufacturing Education and Training Program of the Advanced Research Projects Agency’s **Technology Reinvestment Project (TRP)** in 1993. The \$470 million TRP program was formed to stimulate the transition to a growing, integrated, national industrial capability which provides the most advanced, affordable military systems and most competitive commercial products. More than 2,000 proposals were submitted to the overall program.
- Invited to be a **reviewer and panel member for the Engineering B Panel, Texas Higher Education Coordinating Board, Austin, TX, Aug. 22-24, 1997**, to select the best university research projects submitted for funding by Texas university researchers to the State of Texas.
- **APS GIMS.** Elected to the Executive Committee in 1994-1997. Elected Vice-Chair of the Instrument and Measurement Sciences Group, March 2000. Served as Chair-Elect in 2001, Fellowship Chair in 2001, Chair and Program Chair in 2002, and Past Chair from 2003-2004.
- Served as **Chair of the APS’s Keithley Award** (a \$5,000 cash award) Committee in 2004.
- **APS FIAP.** Elected to the Executive Committee (2005 – 2008) and 2013-2017. Served as Vice-Chair in 2013, Chair-Elect in 2014, Chair in 2015, and Past Chair in 2016-2017. Served on Fellowship Committee in 2007, 2016, and 2017.
- Served on the **George E. Pake Prize Committee** 2017. The Pake Prize recognizes “original research accomplishments with leadership in the management of research or development in industry.”
- **AIP’s Corporate Associates Advisory Committee.** Member from 2001 – 2014, Chair in 2011-2014. Chaired a session on Industry-University Research Partnerships on 10/21/2001 for the 2001 IPF Meeting hosted by Xerox Research & Technology. Chaired a session and helped lead discussions for the 2002 Workshop IPF in Williamsburg, 10/27/2002.
- **AIP’s Industrial Physics Forum (IPF) for Corporate and Academic Leaders.** Industry Outreach connecting physicists in industry and academe to promote scientific advances in the R&D enterprise. Exploring new applications of physics, product developments, and other opportunities for science in today's economic environment. Organizing meetings, often with FIAP and AVS.
- Responsible for organizing and arranging details of the **AIP IPF meeting, held at NIST** on Nov. 7-8, 2005. High-level speakers included Arden Bement, Director of NSF, and speakers from DARPA,

DOE, NIH, and NSF, as well as the major leaders from NIST including the NIST director.

- **Industrial Physics Advisory Board** from 2016-2017
- **FIAP Prize Committee for the Ken Hass Outstanding Student Paper Award.** Served in 2018.
- Served on the Dean of Science's Science Council at Purdue University, meeting at Purdue two weekends a year during 2000-2003. Helped raise money for a student science scholarship in 2003.
- Presented numerous science demonstration lectures over the years at various schools in Montgomery County. Strong interest in improving interest in science among school children.
- Served on organization committee and helped run the NNI Nanotechnology Metrology Workshop held at NIST on Jan. 26-29, 2004. Responsible for writing the main draft of the Nanoelectronics section of the report.
- **Treasurer of the 27<sup>th</sup> International Conference on the Physics of Semiconductors**, Jul. 26-30, 2004, in Flagstaff, AZ. This biennial event is regarded as the most significant conference on the physics of semiconductors. Worked extensively with American Physical Society staff to help with registrations and finances. Total conference budget was about \$500K.
- **IEEE.** Served on the IEEE Electron Device Society's Regions/Chapters Committee, the IEEE Electron Device Society's Semiconductor Manufacturing Committee, and the IEEE's Corporate Innovation Award Committee.
- Served on the executive committee of the Manufacturing Science and Technology Group of the American Vacuum Society and the Governing Council of the Nanoelectronics Research Initiative.

## **Professional Experience:**

### **NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY (NIST), Gaithersburg, MD**

#### **Chief of Staff, Physical Measurements Laboratory**

**2017 - 2020**

Serve as Chief of Staff to PML and specifically to the Director & Deputy of PML as a facilitator of their priorities and objectives for the Laboratory. Provide leadership on complex assignments, internal program policy issues, and significant-impact Lab operations projects. Ensure streamlined activities within PML based upon the priorities of the Director/Deputy. Ensure PML issues are addressed properly, efficiently/judiciously and keep track of progress until resolved.

#### **Division Chief, Engineering Physics Division (formerly the Semiconductor and Dimensional Metrology Division)**

**2015 - 2017**

Led efforts to rename the Semiconductor and Dimensional Metrology Division to the Engineering Physics Division in recognition of the importance of engineering in the Division. See below for the Division description.

#### **Division Chief, Semiconductor and Dimensional Metrology Division (formerly the Semiconductor Electronics Division) (78 Staff, 90 Associates, and 20 Summer Students)**

**2010 - 2015**

Led the merger of the Semiconductor Electronics Division and parts of two Divisions (Precision Engineering Division and Portions of Manufacturing Metrology Division) in the Manufacturing Laboratory at NIST in 2010 that created the Semiconductor and Dimensional Metrology Division. This much larger Division had 78 staff, 90 Guest Researchers, and 20 summer students. The new Division's operating budget was over \$25M. It's measurement science research and standards was spread over the campus of NIST in 105 labs in 8 separate buildings at NIST.

The Semiconductor and Dimensional Metrology Division provides leadership and effective service as it responds to the needs of industry and contributes to the scientific and engineering communities. It provides necessary measurements, physical standards, and supporting data and technology; associated generic technology; and fundamental research results to industry, government, and academia. The primary mission of the Division is to provide technical leadership to industry, government, and academia in measurement science research, development, and standards essential to the semiconductor and advanced manufacturing

industries. The Division realizes the SI unit of length and the derived units of acceleration, and acoustic pressure for the U.S. The Division's programs also respond to industry measurement needs in the areas of dimensional, nanometer-scale, surface, and acoustic pressure metrology; accelerometry; silicon Complementary Metal-Oxide Semiconductor (CMOS) technology; MicroElectroMechanical Systems (MEMS); power electronics; nanoelectronics; and flexible/printed electronics.

The Chief oversees the Division in strategic planning and conducting a wide range of both experimental and theoretical research and development related to semiconductor materials, processes, and devices, as well as making recommendations on employee awards, promotions, salary changes, and performance appraisals.

**Division Chief, Semiconductor Electronics Division (40 Staff and 30 Associates) 1995 - 2010**

Led the Semiconductor Electronics Division, which provided leadership in developing the semiconductor measurement infrastructure essential to improving U.S. economic competitiveness. The Division provided necessary measurements, physical standards, and supporting data and technology; associated generic technology; and fundamental research results to industry, government, and academia. The primary mission of the Division was to provide technical leadership in research and development of the semiconductor measurement infrastructure needs essential to the silicon microelectronics industry, advanced semiconductor materials technologies, and advanced electronic devices based upon molecular or quantum structures. The Division's programs also responded to industry measurement needs related to MicroElectroMechanical Systems (MEMS), power electronics, and various sub-areas of nanotechnology including nanoelectronics, nanocharacterization, bioelectronics, and organic electronics. Oversaw the Division's strategic planning process and conducted a wide range of both experimental and theoretical research and development related to semiconductor materials, processes, and devices. Made recommendations on employee awards, promotions, salary changes, and performance appraisals.

**Program Analyst, Program Office for the Director of NIST 1994-1995**

Provided data collection, analysis, and evaluation related to programs and policies of major importance for use in policy, planning, and development decisions by NIST, Technology Administration, Department of Commerce (DoC), Office of Management and Budget (OMB), and Congress. Analyzed, reported, and promoted ideas, plans, and recommendations as a program analyst for NIST's Program Office in the area of technical management development for NIST managers/supervisors. Also provided support to the National Research Council Board on Assessment Work; coordinated NIST streamlining and reinvention plans and activities for DoC and OMB; prepared programmatic documents, presentations, speeches, and correspondence for the Director, Deputy, and Associate Directors; and carried out topical studies of program and budget-related matters.

Carried out a comprehensive study and survey of leadership and managerial development needs at NIST which was instrumental in leading to the formation of the current NIST Leadership and Employee Development Program.

**Materials Technology Group Leader, Semiconductor Electronics Division 1988-1994**

Provided leadership to Group in devising novel and appropriate characterization techniques and suggested new approaches for solving technical problems. Fostered a commitment in the group for developing, evaluating, and documenting improved techniques for measurements and characterization of semiconductor films, structures, and materials of interest to the semiconductor community.

**UNIVERSITY OF NORTH TEXAS (UNT), Denton, TX**

**Regents Professor of Physics, Department of Physics 1988**

University of North Texas honors a few of their top professors by distinguishing them as Regents Professors. Chosen as the first Regents Professor of Physics at UNT.

**Professor of Physics, Department of Physics 1980-1988**

**Associate Professor of Physics, Department of Physics 1973-1980**

**Assistant Professor of Physics, Department of Physics 1969-1972**

Taught a wide variety of physics and astronomy courses, graduated eight Ph.D. students and seven M.S.

students, and served on numerous committees within the Physics Department and throughout the University community. Received almost \$1 million in research funding from UNT, Office of Naval Research, National Science Foundation, Vought Corporation, Texas Instruments Inc., and Center for Night Vision and Electro-Optics.

**THE NATIONAL SCIENCE FOUNDATION (NSF), Washington, D.C. 1985-1986**  
**Program Director, Solid State Physics Program, Materials Research Division**

As an NSF Rotator, co-managed the \$11 million budget in the Solid State Physics Program. Responsible for evaluating new and renewal proposals and recommending funding decisions.

**MASSACHUSETTS INSTITUTE OF TECHNOLOGY (MIT), Cambridge, MA 1980-1981**  
**Research Scientist**

While on a sabbatical sponsored by the Office of Naval Research at MIT Francis Bitter National Magnet Laboratory, worked with YAG and dye lasers, and a hydrogen-filled Raman cell to carry out two-photon absorption studies in CdS and GaAs. Determined the most accurate set of parameters for the A- and B-free excitons in CdS. For the B-free exciton, determined several parameters for the first time. Published definitive papers in 1982 and 1983.

**Education:**

|                                                                 |           |
|-----------------------------------------------------------------|-----------|
| Ph.D. in Physics, Purdue University, W. Lafayette, IN           | 1969      |
| Research Assistant, Department of Physics, Purdue University    | 1966-1969 |
| M.S. in Physics, Purdue University                              | 1965      |
| Teaching Assistant, Department of Physics, Purdue University    | 1963-1969 |
| B.S. in Physics, Case Western Reserve University, Cleveland, OH | 1963      |
| Tuition Scholarship Awarded                                     | 1959-1960 |

**Professional Honors:**

- **Elected as a Fellow of the Institute of Electrical and Electronics Engineers, Inc. (IEEE)** "for leadership in the development of critical metrology and measurement science at the micro and nano levels" in 2006.
- **Elected as a Fellow of the American Physical Society in 1991** "for pioneering contributions involving two-photon absorption spectroscopy in high magnetic fields and for quantum transport measurements to elucidate novel band structure features of many semiconductors."
- Received a thank you letter from President Clinton, The White House, for contributions toward implementing the Technology Reinvestment Project on Jan. 31, 1994.
- Received a thank you letter from Thomas E. McGunigal, GOES Program Manager on August 8, 1994 for serving on an assessment team for NOAA. "The findings which you're your team developed were embraced by NOAA, the Department of Commerce, and NASA, and the program was redirected in the fall of 1991 in accordance with your recommendations. This redirection was a clear turning point in the program... Thank you for your critical contribution to this vital national program."
- Selected to be a recipient of the President's Award, University of North Texas in 1983. This award recognizes individuals or groups currently or formerly affiliated with UNT whose endeavors have furthered the cause of the university and whose accomplishments have brought state, national, or international recognition to UNT. The award was given to members of the Center of Applied Quantum Electronics at UNT. Seiler was responsible for helping form the Center in the 1970's.
- Selected to be the first Regents Professor of Physics in 1988 at the University of North Texas. These professorships provide recognition and salary support for individuals currently at the rank of professor who have performed outstanding research, teaching, or both.
- Received the Infrared Information Symposia (IRIS) award in 1998 in recognition of his distinguished

- participation in the activities of IRIS as Chairman of the Infrared Materials Specialty Group.
- Received a Purdue University School of Science Distinguished Alumnus Award for 2000 at Purdue University for semiconductor physics leadership. The award recognizes graduates whose outstanding achievement in professional and related fields of endeavor merit particular distinction. The award consists of a plaque which was presented at their banquet on the evening of Apr. 28, 2000. In addition, Seiler's name and picture were added to a permanent Distinguished Alumni display located in the School of Science.
- Chosen by NIST leaders (with approval by DoC) to be interviewed by the *Washington Post*'s Stephen Barr. Limited material published in "Federal Diary" column on Jun. 22, 2003.
- Received the 2005 Equal Employment Opportunity/Diversity Award from NIST. The award recognizes exceptionally significant accomplishments and contributions to equal employment opportunity and diversity goals. The award consists of a plaque and a shared \$2000 honorarium.
- 2009 Test Engineer of the Year Finalist for Test and Measurement World Magazine - see [http://www.tmworld.com/article/320917-Vote for the 2009 Test Engineer of the Year.php](http://www.tmworld.com/article/320917-Vote%20for%20the%202009%20Test%20Engineer%20of%20the%20Year.php)

### **Publications and Talks:**

Authored more than 160 invited and contributed papers and gave over 200 hundred talks at national and international meetings. Major contributions include editing a book by Seiler, D. G., and Littler, C. L., Eds., *The Spectroscopy of Semiconductors*, in the prestigious *Semiconductors and Semimetals*, Vol. 36 (Academic Press, New York, 1992) and contributing a major chapter by Seiler, D. G., Littler, C. L., and Weiler, M. H., "One- and Two-Photon Magneto-Optical Spectroscopy of InSb and HgCdTe" for the book, pp. 293-427. Also contributed a prestigious chapter by D. G. Seiler, S. Zollner, A. C. Diebold, P. Amiritharaj, "Optical Properties of Semiconductors" in *Handbook of Optics*, McGraw Hill, 1221 Ave. of the Americas, New York, NY, 10020-1095, United States, pp. 5.1-5.91, (19-Oct-2009).

He is also co-editor of journals and books containing the proceedings from 15 different international conferences and/or workshops.

### **Professional Associations and Activities:**

Seiler has been integrally involved in a wide variety of important activities for the semiconductor community, including:

- Member of Technical Working Groups for all three versions of the Semiconductor Industry Association's *National Technology Roadmap for Semiconductors (NTRS)* in 1991, 1994, and 1997; member of the International Technical Roadmap for Semiconductors (ITRS) in 1999 and subsequent years.
- Member of SEMATECH's Analytical Lab Managers Working Group (ALMWG). The ALMWG provides coordination between suppliers of lab equipment, member companies, suppliers of analytical measurement services, universities, and government labs. The focus is on developing the measurement technology of the future (early 1990s).
- Participated in program evaluation and review panels for Hughes Research Labs Corporate Research, Department of Energy's Sandia National Labs, the Texas Higher Education Coordinating Board, and NSF's Small Business in Research Program (late 1990s).
- Invited to serve as a member of the editorial board for the journal *Semiconductor Science and Technology* (1989-94).
- Elected to serve as a member of the Executive Committee (1994-97) of the Instrument and Measurement Science Topical Group of the American Physical Society.
- Elected Vice-Chair of the American Physical Society's Instrument and Measurement Sciences Group, Mar. 2000. Served as the Program Chair for the APS's 2002 March Meeting for GIMS. Took over as Chair Elect in Mar. 2002.

- Served as Chair of the APS's Keithley Award (a \$5,000 cash award) Committee in 2004.
- Elected to serve on the Executive Committee of the APS's Forum on Industrial and Applied Physics in 2005. Served on FIAP's Fellowship committee in 2007.
- Invited to Participate in the Electronic Materials Working Group Industry-Government Workshop, Dallas, Texas, to address the dominant electronic materials issues facing U.S. industry and provide recommendations critical to the advancement and competitiveness of the U.S. electronics and materials industries (1994). The NIST IR 5777 report "Beyond the Technology Roadmaps: An Assessment of Electronic Materials Research and Development" was published in Mar. 1996.
- Held the position of Recording Secretary for the American Society for Testing and Materials (ASTM) Committee F-01 on Electronics (1996-97). ASTM provides a forum for producers, users, ultimate consumers, and those having a general interest (representatives of government and academia) to meet on common ground and write standards for materials, products, systems, and services.
- Served on the executive committee of the Manufacturing Science and Technology Group of the American Vacuum Society, 1996 to 2003.
- Served on the IEEE EDS Region/Chapters Committee, 2000 to 2007.
- Invited by Bob Doering to serve on IEEE Electron Device Society's EDS Semiconductor Manufacturing Committee, 2003 to 2010.

#### **Membership in Professional Societies:**

American Assoc. for Advancement of Science  
 American Physical Society  
 American Society of Testing and Materials  
 American Vacuum Society  
 Institute of Electronics and Electrical Engineers  
 Materials Research Society

#### **Membership in Honorary Societies:**

Pi Delta Epsilon (Journalism)  
 Sigma Pi Sigma (Physics)  
 Sigma Xi (Scientific Research)

## **Publications and Talks:**

Authored more than 160 invited and contributed papers and gave over 200 hundred talks at national and international meetings. Major contributions include editing a book by Seiler, D. G., and Littler, C. L., Eds., *The Spectroscopy of Semiconductors*, in the prestigious Semiconductors and Semimetals, Vol. 36 (Academic Press, New York, 1992) and contributing a major chapter by Seiler, D. G., Littler, C. L., and Weiler, M. H., "One- and Two-Photon Magneto-Optical Spectroscopy of InSb and HgCdTe" for the book, pp. 293-427. Also contributed a prestigious chapter by D. G. Seiler, S. Zollner, A. C. Diebold, P. Amirtharaj, "Optical Properties of Semiconductors" in Handbook of Optics, McGraw Hill, 1221 Ave. of the Americas, New York, NY, 10020-1095, United States, pp. 5.1-5.91, (19-Oct-2009).

He is also co-editor of journals and books containing the proceedings from 15 different international conferences and/or workshops.

### **Publications (1963-Present)**

1. Seiler, D. G., Vacuum Evaporated Thin Films, Engineering and Science Review, Case Institute of Technology 6, 10 (1963).
2. Seiler, D. G., and Becker, W. M., Observation of Beating Effects in Shubnikov-de Haas Oscillations in GaSb, Phys. Lett. 26A, 96 (1967).
3. Seiler, D. G., and Becker, W. M., Warped Fermi Surface in GaSb from Shubnikov-de Haas Measurements, Phys. Rev. 183, 784 (1969).
4. Seiler, D. G., and Becker, W. M., Effect of Hydrostatic Pressure on the Band Structure of GaSb, Phys. Rev. 186, 784 (1969).
5. Seiler, D. G., Becker, W. M., and Roth, L. M., Inversion-Asymmetry Splitting of the Conduction Band in GaSb from Shubnikov-de Haas Measurements, Phys. Rev. 1B, 764 (1970).
6. Seiler, D. G., Shubnikov-de Haas Frequency Anisotropy in GaSb, Phys. Rev. 1B, 2824 (1970).
7. Seiler, D. G., Warped Fermi Surface of the Conduction Band in InSb, Phys. Lett. 31A, 309 (1970).
8. Galazka, R. R., Becker, W. M., and Seiler, D. G., Warping and Symmetry of Conduction Band in HgSe from Shubnikov-de Haas Measurements, J. Phys. Chem. Solids Suppl. 32, 481 (1971).
9. Sladek, R. I., Gertner, E. R., and Seiler, D. G., de Haas-van Alphen Effect in n-InSb, Phys. Rev. 3B, 2608 (1971).
10. Seiler, D. G., Galazka, R. R., and Becker, W. M., Band Structure of HgSe, Band Parameter Determinations from Effective Mass Data, and Concentration Dependence and Anisotropy of Heating Effects in the Shubnikov-de Haas Oscillations, Phys. Rev. B3, 4274 (1971).
11. Seiler, D. G., Concentration Dependence of the Warped Fermi Surface in InSb, Phys. Status Solidi (b) 49, K15 (1972).
12. Seiler, D. G., Alsup, D. L., and Muthukrishnan, R., Effect of Uniaxial Stress on the Magnetophonon Effect in n-InSb, Solid State Commun. 10, 865 (1972).
13. Seiler, D. G., and Addington, F., A Uniaxial Stress Apparatus, Rev. Sci. Instrum. 43, 749 (1972).
14. Seiler, D. G., and Hathcox, K., Shubnikov-de Haas Effect under Stress: A New Tool for Determining Deformation Potentials and Band Structure Information, Phys. Rev. Lett. 29, 647 (1972).
15. Seiler, D. G., and Hathcox, K. L., Effect of Uniaxial Stress on the Shubnikov-de Haas Effect on HgSe, Proceedings of the 11th International Conference on the Physics of Semiconductors, Warsaw, Poland (Polish Scientific Publishers, Warsaw, 1972), p. 287.
16. Muthukrishnan, R., and Seiler, D. G., Deformation Potential Parameters of n-InSb, Phys. Status Solidi (b) 54, K83 (1972).
17. Seiler, D. G., Joseph, T. J., and Bright, R. D., Effect of Uniaxial Stress on the Longitudinal Magnetophonon Oscillations in n-InSb, Phys. Rev. B 9, 716 (1974).
18. Seiler, D. G., and Hathcox, K. L., Effect of Uniaxial Stress on Shubnikov-de Haas Oscillations in HgSe, Phys. Rev. B 9, 648 (1974).
19. Seiler, D. G., Effects of Uniaxial Strain on the Shubnikov-de Haas and Magnetophonon Effects in Semiconductors, International Conference on the Application of High Magnetic Fields in Semiconductor Physics,

- Wurzburg, Germany, pp.492-565 (1975).
20. Mackey, J. H., Vaughn, B. J., Rater, L. M., and Seiler, D. G., Evidence for a Deep Acceptor Level in p-InSb from the Variation of Hole Density with Uniaxial Stress, *Solid State Commun.* 16, 997 (1975).
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158. Z. Ma, D. G. Seiler, "Introduction: Characterization and Metrology for Nanoelectronics and Nanostructures" Characterization and Metrology for Nanoelectronics and Nanostructures, Chapter: Introduction, Pan Stanford, 8 Temasek Boulevard, Singapore, 038988, Singapore, pp. xxxi-xli, (23-Sep-2016)
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## Talks (1968-Present)

1. D. G. Seiler and W. M. Becker, "Observation of Beating Effects in Shubnikov-de Haas Oscillations in GaSb," Bull. Am. Phys. Soc. 13, 94 (1968).
2. D. G. Seiler and W. M. Becker, "Warping of the  $k=0$  Conduction Band in GaSb," Bull. Am. Phys. Soc. 14, 328 (1969).
3. D. L. Alsup and D. G. Seiler, "Apparatus for Studying Properties of Semiconductors under Uniaxial Stress at Low Temperatures," Texas Academy of Science meeting at Angelo State, March 6-7, 1970.
4. D. L. Alsup and D. G. Seiler, "Influence of Uniaxial Stress on the Magnetophonon Effect in n-type InSb," Bull. Am. Phys. Soc. 15, 1314 (1970).
5. D. G. Seiler and W. M. Becker, "Conduction Band Structure of GaSb," Bull. Am. Phys. Soc. 14, 328 (1970).
6. D. G. Seiler, "Warped Fermi Surface of the Conduction Band in InSb," Bull. Am. Phys. Soc. 15, 312 (1970).
7. D. L. Alsup and D. G. Seiler, "The Effect of Uniaxial Stress on the Magnetophonon Effect of InSb," Texas Academy of Science meeting at Nacogdoches, March 11-13, 1971.
8. K. L. Hathcox and D. G. Seiler, "The Influence of Uniaxial Stress on the Galvanomagnetic Properties of HgSe," Bull. Am. Phys. Soc. 16, 336 (1971).
9. K. L. Hathcox, J. R. Sybert, and D. G. Seiler, "Beating Effects in the Shubnikov-de Haas Oscillations of Uniaxially Stressed HgSe," Texas Academy of Science meeting at Nacogdoches, March 11-13, 1971.
10. T. J. Joseph and D. G. Seiler, "de-Haas-van Aiphen Effect in Semiconductors," Texas Academy of Science meeting at San Marcos, March 10-11, 1972.
11. K. L. Hathcox and D. G. Seiler, "Effects of Uniaxial Stress on the Band Structure of HgSe," Texas Academy of Science meeting at San Marcos, March 10-11, 1972.
12. D. G. Seiler and K. L. Hatchcox, "Effect of Uniaxial Stress on the Shubnikov-de Haas Effect in HgSe," presented at the 11<sup>th</sup> International Conference on the Physics of Semiconductors, Warsaw, Poland, July 1972.
13. R. Muthukrishnan and D. G. Seiler, "Effective Mass Tensor of n-InSb Under Uniaxial Stress," Bull. Am. Phys. Soc. 17, 62 (1972).
14. D. G. Seiler and F. Addington, "Effect of Uniaxial Stress on the Magnetophonon Oscillations in the Longitudinal Magnetoresistance of n-InSb," Bull. Am. Phys. Soc. 17, 281 (1972).
15. B. Moore and D. G. Seiler, "Low Voltage TE-CO<sub>2</sub> Laser," J. Opt. Soc. Amer. 64, 1360 (1974).
16. D. G. Seiler, "Construction and Operation of a Carbon Monoxide Laser," Texas Academy of Science meeting at Denton, March 1974.
17. D. G. Seiler and K. L. Hathcox, "The Influence of Uniaxial Stress on the Beating Patterns Observed in the Shubnikov-de Haas Oscillations in n-HgSe," Bull. Am. Phys. Soc. 19, 250 (1974).
18. B. D. Bajaj and D. G. Seiler, "Electron Wave Propagation through InSb Crystals at Liquid Helium Temperatures," Texas Academy of Science meeting at Denton, March 1974.
19. B. J. Vaughn, H. J. Mackey, and D. G. Seiler, "p-Type InSb under Stress," Texas Academy of Science meeting at Denton, March 1974.
20. J. L. Tipton and D. G. Seiler, "Two-Dimensional Scanning of Laser Beam Profiles," Texas Academy of Science meeting at Denton, March 1974.
21. Invited: D. G. Seiler, "Effects of Uniaxial Strain on the Shubnikov-de Haas and Magnetophonon Effects in Semiconductors," a one hour lecture at the International Conference on the Application of High Magnetic Fields in Semiconductor Physics, Wurzburg, Germany, July 24 - August 2, 1974.
22. J. R. Lindle, B. D. Bajaj, and D. G. Seiler, "Practical Techniques in the Utilization of a Commercial Variable Temperature Dewar," Texas Academy of Science meeting at Huntsville, March 21-22, 1975.
23. D. G. Seiler, "A Review of the Role of Uniaxial Stress in Studying Semiconductor Properties," Texas Academy of Science meeting at Huntsville, March 21-22, 1975.
24. B. M. Wallace and D. G. Seiler, "Operational Characteristics of a CO<sub>2</sub> Laser," Texas Academy of Science meeting at Huntsville, March 21-22, 1975.
25. B. T. Moore and D. G. Seiler, "Design and Construction of a Low Voltage TE-CO<sub>2</sub> Laser," Texas Academy of Science meeting at Huntsville, March 21, 1975.
26. A. E. Stephens, D. G. Seiler, H. J. Mackey, and J. R. Sybert, "The Shubnikov-de Haas Effect in n-InSb," Bull. Amer. Phys. Soc. 20, 391 (1975).
27. B. D. Bajaj and D. G. Seiler, "Stress-Induced Beating Patterns in the Shubnikov-de Haas Effect in n-InSb," Bull. Am. Phys. Soc. 20, 391 (1975).
28. D. C. Dowdy and D. G. Seiler, "A Direct Discharge CO<sub>2</sub> Laser," Texas Academy of Science meeting at College

- Station, March 4-6, 1976.
29. B. T. Moore and D. G. Seiler, "Spin-Flip Raman Lasers," Texas Academy of Science meeting at College Station, March 4-6, 1976.
  30. B. D. Bajaj and D. G. Seiler, "Conduction Band Splitting in n-InSb from Shubnikov-de Haas Measurements," Texas Academy of Science meeting at College Station, March 4-6, 1976.
  31. D. G. Seiler, "Hot Electrons in Semiconductors," Texas Academy of Science meeting at College Station, March 4-6, 1976.
  32. B. M. Wallace and D. G. Seiler, "A Direct-Discharge CO<sub>2</sub> Laser," Texas Academy of Science meeting at College Station, March 4-6, 1976.
  33. L. Tipton and D. G. Seiler, "A Short CO<sub>2</sub> Laser Pulse Generator Scheme," Texas Academy of Science meeting at College Station, March 4-6, 1976.
  34. H. Kahlert and D. G. Seiler, "A New Method for Studying Hot Electron Oscillatory Magnetoresistance Phenomena," Texas Academy of Science meeting at Waco, March 10-12, 1977.
  35. B. T. Moore, H. Kahlert, and D. G. Seiler, "Laser-Induced Hot Electron Effects in n-InSb," Texas Academy of Science meeting at Waco, March 10-12, 1977.
  36. L. Tipton, A. L. Smirl, and D. G. Seiler, "Ultrashort Optical Pulse Measurements at 10<sup>-6</sup> Microns," Texas Academy of Science meeting at Waco, March 10-12, 1977.
  37. H. Kahlert, D. G. Seiler, and A. E. Stephens, "High Resolution Measurements of the Hot-Electron Magnetophonon Effect in n-InSb at 77 K," Bull. Am. Phys. Soc. 22, 460 (1977).
  38. A. E. Stephens, R. E. Miller, J. R. Sybert, and D. G. Seiler, "Shubnikov-de Haas Effect in n-InAs and n-GaAs," Bull. Am. Phys. Soc. 22, 460 (1977).
  39. D. G. Seiler and H. Kahlert, "A Magnetic Field Modulation Technique for the Study of Hot Carrier Oscillatory Magnetoresistance Phenomena," Bull. Am. Phys. Soc. 22, 460 (1977).
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  41. B. T. Moore, D. G. Seiler, and H. Kahlert, "CO<sub>2</sub> Laser-Induced Hot Electron Effects in n-InSb," presented at the International Conference on Hot Electrons in Semiconductors, Denton, Texas, July 1977, See Bull. Am. Phys. Soc. 22, 709 (1977).
  42. D. G. Seiler, J. R. Barker, B. T. Moore, and K. E. Hansen, "Photoconductivity of Laser Excited Hot Electrons in Degenerate n-InSb," presented at the 14<sup>th</sup> International Conference on the Physics of Semiconductors, Edinburgh, Scotland, September 1978.
  43. D. G. Seiler, L. K. Hanes, M. W. Goodwin, and A. E. Stephens, "Shubnikov-de Haas Effect Studies on Optically Heated Electrons in n-InSb," presented at the International Conference on Solids and Plasmas in High Magnetic Fields, Cambridge, Massachusetts, September 1978.
  44. L. Hanes and D. G. Seiler, "Characteristics of a Sealed-Off CO<sub>2</sub> Laser," Texas Academy of Science meeting at Lubbock, March 10-11, 1978.
  45. M. W. Goodwin and D. G. Seiler, "Magnetophonon Effect in p-Type InSb," Texas Academy of Science meeting at Lubbock, March 10-11, 1978.
  46. B. T. Moore and D. G. Seiler, "Laser Induced Hot Electrons in InSb," Texas Academy of Science meeting at Lubbock, March 10-11, 1978.
  47. B. T. Moore and D. G. Seiler, "Wavelength Dependence of CO<sub>2</sub> Laser-Induced Hot Electron Effects in n-InSb," Bull. Am. Phys. Soc. 23, 329 (1978).
  48. D. G. Seiler and B. T. Moore, "Determination of CO<sub>2</sub> Laser-Induced Hot Electron Temperatures from the Photoconductivity of n-InSb," Bull. Am. Phys. Soc. 23, 329 (1978).
  49. L. K. Hanes and D. G. Seiler, "Interaction of CO<sub>2</sub> Laser Radiation with InSb," Texas Academy of Science meeting at Arlington, March 8-10, 1979.
  50. Invited: D. G. Seiler and M. W. Goodwin, "New Intraband Magneto-Optical Studies on n-InSb," a one hour seminar presented at the NATO Advanced Study Institute on Theoretical Aspects and New Developments in Magneto-Optics, Antwerpen, Belgium, July 16-27, 1979.
  51. Invited: D. G. Seiler, to give lecture at the International Summer School on Narrow Gap Semiconductors, Nimes, 3-15 September 1979. Could not attend because of teaching duties at NTSU.
  52. L. K. Hanes and D. G. Seiler, "Investigation of Absorption Processes Near the Bandgap of InSb by Laser-Induced Hot Electron Effects," Bull. Am. Phys. Soc. 24, 310 (1979).
  53. D. G. Seiler and K. E. Hansen, "Laser-Induced Photoconductivity in n-InSb," Bull. Am. Phys. Soc. 24, 310 (1979).
  54. J. L. Tipton and D. G. Seiler, "Transient Behavior of the CO<sub>2</sub> Laser-Induced Photoconductivity in n-InSb," Bull. Am. Phys. Soc. 24, 316 (1979).

55. R. R. Galazka, W. M. Becker, and D. G. Seiler, "Symmetry of Conduction Band in HgSe," Conference on the Physics of Semimetals and Narrow Gap Semiconductors, Dallas, Texas, March 1980.
56. D. G. Seiler and L. K. Hanes, "Cold Electron Photo-Injection in Degenerate n-InSb at 1.8 K," presented at the 15<sup>th</sup> International Conference on the Physics of Semiconductors, Kyoto, Japan, September 1980.
57. D. G. Seiler, M. W. Goodwin, and W. Zawadzki, "New Magneto-Optical Transitions in n-InSb: Mid-Gap Deep Defect Level and Three Phonon Assisted Processes," presented at the OJI International Seminar on Physics in High Magnetic Fields, Hakone, Japan, September 1980.
58. M. W. Goodwin and D. G. Seiler, "New CO<sub>2</sub> Laser-Induced Magneto-Optical Transitions in n-InSb," Bull. Am. Phys. Soc. 25, 361 (1980).
59. L. K. Hanes and D. G. Seiler, "CO<sub>2</sub> Laser-Induced Cooling of the Conduction electrons in n-InSb," Bull. Am. Phys. Soc. 25, 362 (1980).
60. D. G. Seiler, M. W. Goodwin, and M. H. Weiler, "High Resolution Two-Photon Magneto Spectroscopy in InSb at Milliwatt CO<sub>2</sub> cw Powers," presented at the International Conference on Excited States and Multiresonant Nonlinear Optical Processes in Solids, Aussois, France, March 1981.
61. Invited: D. G. Seiler, to be a speaker at the XI Semiconductor Seminar-Jaszowiec 81 in Poland, April 27-May 2, 1981. Could not attend because of teaching duties at NTSU.
62. R. Kaplan, R. J. Wagner, D. G. Seiler, C. L. Littler, M. H. Wiler, and W. Zawadzki, "High Resolution Magneto-Optical Studies of Free and Bound Hole Excitations in InSb," presented at the 4<sup>th</sup> International Conference on the Physics of Narrow Gap Semiconductors, Linz, Austria, September 1981.
63. D. G. Seiler, M. W. Goodwin, and M. H. Weiler, "Two-Photon Spectroscopy in InSb with cw CO<sub>2</sub> Lasers," presented at the 4<sup>th</sup> International Conference on the Physics of Narrow Gap Semiconductors, Linz, Austria, September 1981.
64. M. H. Weiler, D. G. Seiler, and M. W. Goodwin, "High Resolution Two-Photon Magneto-Spectroscopy in InSb," Bull. Am. Phys. Soc. 26, 354 (1981).
65. D. Heiman, D. G. Seiler, R. Feigenblatt, R. L. Aggarwal, and B. Lax, "Two-Photon Magneto-Spectroscopy of Excitons in CDS," Bull. Am. Phys. Soc. 26, 795 (1981).
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67. Invited: D. G. Seiler, "Two-Photon Absorption Spectroscopy of Semiconductors," at the Southeastern Section of the American Physical Society, Lexington, Kentucky, October 1982, Bull. Amer. Phys. Soc. 27, 739 (1982).
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70. S. W. McClure and D. G. Seiler, "Anisotropic Two-Photon Magneto-Absorption Effects in n-InSb," Optics News 8, 57 (1982).
71. C. L. Littler, D. G. Seiler, R. Kaplan, and R. J. Wagner, "Magneto-Optical Detection of Deep Acceptor impurities in p-InSb," Optics News 8, 39 (1982).
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73. D. G. Seiler, M. W. Goodwin, K. E. Littler, "Laser-Induced Resonant Magneto-Optical Transitions from Deep Levels in n-InSb," presented at the 16<sup>th</sup> International Conference on the Physics of Semiconductors, Montpellier, France, September 1982.
74. Invited: D. G. Seiler, M. W. Goodwin, S. W. McClure, and L. A. Veileux, "Two Photon Spectroscopy in InSb at High Magnetic Fields," paper presented at the International Conference on the Applications of High Magnetic Fields in Semiconductor Physics, Grenoble, France, September 1982.
75. C. L. Littler, D. G. Seiler, and S. W. McClure, "Two-Photon Induced Photo-Hall Effect in n-InSb," Bull. Am. Phys. Soc. 28, 338 (1983).
76. S. W. McClure, D. G. Seiler, and C. L. Littler, "CO<sub>2</sub> Laser-Induced Photoexcited Carrier Lifetimes in n-InSb," Bull. Am. Phys. Soc. 28, 338 (1983).
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79. D. G. Seiler, C. L. Littler, and R. J. Justice, "Nonlinear Oscillations, Bifurcation, and Chaos in n-InSb," presented

- at the 17<sup>th</sup> International Conference on the Physics of Semiconductors, San Francisco, California, August 1984.
80. C. L. Littler, D. G. Seiler, and S. W. McClure, "Temperature Dependence of the Energy Gap of InSb Using Nonlinear Optical Techniques," *Bull. Am. Phys. Soc.* 29, 304 (1984).
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  85. R. J. Justice, D. G. Seiler, and C. L. Littler, "A Survey of Chaos and Chaotic Systems," American Physical Society Talk, Houston, TX, March 1985.
  86. C. L. Littler and D. G. Seiler, "Photo-Hall Spectroscopy of Shallow and Deep Impurities in n-InSb," *Bull. Am. Phys. Soc.* 30, 368 (1985).
  87. D. G. Seiler, S. W. McClure, R. J. Justice, and M. R. Loloee, "Nonlinear Optical Characterization of  $\text{Hg}_{1-x}\text{Cd}_x\text{Te}$  Using Two-Photon Absorption Techniques," presented at the U.S. Workshop on the Physics and Chemistry of  $\text{Hg}_{1-x}\text{Cd}_x\text{Te}$ , San Diego, CA, October 1985.
  88. Invited: D. G. Seiler and C. L. Littler, "Nonlinear Spectroscopy of Narrow Gap Semiconductors in High Magnetic Fields," paper at the International Conference on High Magnetic Fields in Semiconductor Physics, Wurzburg, Germany, August 1986.
  89. S. W. McClure and D. G. Seiler, "Nonlinear Optical Characterization of Carrier Lifetimes in InSb Using Two-Photon Absorption Techniques," *Bull. Am. Phys. Soc.* 31, 351 (1986).
  90. M. W. Goodwin, M. A. Kinch, R. J. Koestner, M. C. Chen, D. G. Seiler, and R. J. Justice, "Electrical and Optical Measurements of MBE Grown HgTe and HgTe-CdTe Superlattice Films," presented at the U.S. Workshop on the Physics and Chemistry of  $\text{Hg}_{1-x}\text{Cd}_x\text{Te}$ , Dallas, TX, October, 1986.
  91. Invited: D. G. Seiler and C. L. Littler, "Two-Photon Spectroscopy of InSb-Type Semiconductors," lecture presented at the XVI International School on the Physics of Semiconducting Compounds, Ustron-Jazowiec, Poland, April 6-12, 1987.
  92. L. K. Hanes and D. G. Seiler, "Laser Induced Cooling of Hot Electrons in n-InSb by Free Carrier Assisted Transitions," presented at the 5<sup>th</sup> International Conference on Hot Carriers in Semiconductors, Boston, Massachusetts, July 20-24, 1987.
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  96. D. L. Leslie-Pelecky, D. G. Seiler, M. R. Loloee, and C. L. Littler, "A New Approach to the Characterization of Bulk and LPE  $\text{Hg}_{1-x}\text{Cd}_x\text{Te}$  Using Hall Coefficient and Magnetoresistance Measurements," *Bull. Am. Phys. Soc.* 32, 491 (1987).
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  98. R. J. Justice, D. G. Seiler, M. W. Goodwin, and R. J. Koestner, "Shubnikov-de Haas Measurements of p- and n-type HgTe-CdTe Superlattices," *Bull. Am. Phys. Soc.* 32, 726 (1987).
  99. D. L. Leslie-Pelecky, D. G. Seiler, M. R. Loloee, and C. L. Littler, "A Novel Characterization Method Using Hall Coefficient and Magnetoresistance Measurements," presented at the 6<sup>th</sup> Annual Joint Symposium on Electronic Materials, Processing, and Characterization, Dallas, TX, June 1-2, 1987. Best paper award.
  100. R. J. Justice, D. G. Seiler, M. W. Goodwin, R. J. Koestner, and M. A. Kinch, "Characterization of MBE Grown HgTe Films by Shubnikov-de Haas Measurements," presented at the U.S. Workshop on the Physics and Chemistry of  $\text{Hg}_{1-x}\text{Cd}_x\text{Te}$ , New Orleans, LA, October 1987.
  101. Invited: D. G. Seiler, "The National Science Foundation: Perspectives From a Past Rotator," at the Sectional Meeting of the Society of Physics Students, Dallas, Texas, April 1986, *Bull. Am. Phys. Soc.* 32, 1183 (1987).
  102. Invited: D. G. Seiler and C. L. Littler, "Instrumentation and Techniques for Two-Photon Spectroscopy of Semiconductors," at the March APS Meeting, New York, 1987, *Bull. Am. Phys. Soc.* 32, 498 (1987).

103. Invited: D. G. Seiler, "Two-Photon Absorption of Semiconductors," at the Meeting of the IRIS Specialty Group on Infrared Materials, Menlo Park, CA, June 21-22, 1988.
104. Invited: D. G. Seiler, "The Shubnikov-de Haas Effect: A Powerful Tool for Characterizing Semiconductors," presented at the International Conference On High Magnetic Fields in Semiconductor Physics, Wurzburg, Germany, August 1988.
105. D. G. Seiler, S. A. Milazzo, A. J. Durkin, M. R. Loloee, and C. L. Littler, "Simultaneous Measurement of the Energy Gap and Conduction Band Effective Mass in n-InSb," presented at the 19<sup>th</sup> International Conference on the Phys. Of Semiconductors, Warsaw, Poland, August 15-19, 1988.
106. R. L. Schalek, D. L. Leslie-Pelecky, D. G. Seiler, M. R. Loloee, and C. L. Littler, "Investigation of Anomalous n-type LPE HgCdTe Samples Using the magnetoconductivity Tensor Method," Bull. Amer. Phys. Soc. 33, 1341 (1988).
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110. D. G. Seiler, S. A. Milazzo, M. R. Loloee, and C. L. Littler, "Nonlinear Magneto-Optical Spectroscopy of  $Hg_{1-x}Cd_xTe$  by Two-Photon Absorption Techniques," presented at U.S. Workshop on the Physics and Chemistry of  $Hg_{1-x}Cd_xTe$ , Orlando, Florida, October 10-14, 1988.
111. C. L. Littler, W. Zawadzki, M. R. Loloee, X. Song, and D. G. Seiler, "New Magneto-Optical Resonances in n-InSb: Impurity Shifted and Phonon-Assisted Impurity-Shifted Harmonics of Cyclotron Resonance," presented at the International Conference On Narrow Gap Semiconductors and Related Materials, Gaithersburg, Maryland, June 12-15, 1989.
112. D. G. Seiler, G. B. Ward, R. J. Justice, R. J. Koestner, M. W. Goodwin, M. A. Kinch, and J. R. Meyer, "Determination of Effective Masses on n- and p-type HgTe-CdTe Superlattices by Shubnikov-de Haas Measurements," Bull. Amer. Phys. Soc. 34, 1002 (1989).
113. M. R. Loloee, C. L. Littler, and D. G. Seiler, "Temperature Dependence of the Energy Gap of HgCdTe Using Nonlinear Optical Techniques," Bull. Amer. Phys. Soc. 34, 1030 (1989).
114. C. L. Littler, M. R. Loloee, and D. G. Seiler, "Magneto-Optical Investigation of Impurity and Defect levels in HgCdTe Alloys," presented at U.S. Workshop on the Physics and Chemistry of HgCdTe and Related II-VI Compounds, San Diego, California, October 3-5, 1989.
115. D. G. Seiler, J. R. Lowney, C. L. Littler, and M. R. Loloee, "A New Accurate Relationship of  $E_g(x, T)$  for  $Hg_{1-x}Cd_xTe$  Alloys," presented at U.S. Workshop on the Physics and Chemistry of HgCdTe and Related II-VI Compounds, San Diego, California, October 3-5, 1989.
116. C. L. Littler, I. T. Yoon, X. N. Song, W. Zawadzki, P. Pfeffer, and D. G. Seiler, "Orbital and Spin Anisotropy of Conduction Electrons in InSb," presented at the International Conference on the Application of High Magnetic Fields in Semiconductor Physics, Wurzburg, West Germany, July 1990.
117. C. L. Littler, M. R. Loloee, W. Zawadzki, and D. G. Seiler, "Two-Phonon Assisted Magneto-Optical Transitions in HgCdTe," presented at the International Conference on the Application of High Magnetic Fields in Semiconductor Physics, Wurzburg, West Germany, July 1990.
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119. C. L. Littler, M. R. Loloee, W. Zawadzki, and D. G. Seiler, "Bound-Hole Excitations in p-HgCdTe," presented at the 20<sup>th</sup> International Conference on the Physics of Semiconductors, Thessaloniki, Greece, August 1990.
120. X. Song, C. L. Littler, and D. G. Seiler, "Experimental Investigation of Chaotic Behavior in n-InSb," Bull. Amer. Phys. Soc. 35, 106 (1990).
121. W. Zawadzki, C. L. Littler, X. Song, and D. G. Seiler, "Phonon-Assisted Magneto-Donor Resonances in n-InSb," Bull. Amer. Phys. Soc. 35, 107 (1990).
122. C. L. Littler and D. G. Seiler, "Magneto-Optical Investigations of HgCdTe Alloys," Bull. Amer. Phys. Soc. 35, 107 (1990).
123. M. R. Loloee, C. L. Littler, and D. G. Seiler, "Magneto-Optical Investigations of HgCdTe Alloys," Bull. Amer. Phys. Soc. 35, 570 (1990).
124. X. N. Song, C. L. Littler, W. Zawadzki, and D. G. Seiler, "Phonon-Assisted Donor-Shifted Magneto-Optical Transitions in n-InSb," Bull. Amer. Phys. Soc. 35, 706 (1990).
125. C. L. Littler, D. G. Seiler, and I. T. Yoon, "Magneto-Optical Investigation of Impurities and Defects in HgCdTe,"

- presented at the SPIE Southcentral Meeting on Optical Engineering, Dallas, Texas, May 10, 1990.
126. D. G. Seiler, J. R. Lowney, C. L. Littler, I. T. Yoon, and M. R. Loloee, "Photoexcited Hot Electron Relaxation Processes in n-HgCdTe Through Impact Ionization into Traps," presented at the 1990 U.S. Workshop on the Physics and Chemistry of Mercury Cadmium Telluride, San Francisco, California, October 2-5, 1990.
  127. D. G. Seiler, J. R. Lowney, C. L. Littler, I. T. Yoon, "Intrinsic Carrier Concentrations in Long Wavelength HgCdTe based on the New Nonlinear Temperature Dependence of  $E_g(x,T)$ ," presented at the Fall Meeting of the Materials Research Society, Boston, Massachusetts, November 26-30, 1990.
  128. I. T. Yoon, C. L. Littler, W. Zawadzki, P. Pfeffer, and D. G. Seiler, "Orbital and Spin Anisotropy of Conduction Electrons in InSb," presented at the Fall Meeting of the Texas Section of the American Physical Society, November 9-10, 1990, Bull. Amer. Phys. Soc. 36, 1697 (1991).
  129. D. G. Seiler, J. R. Lowney, C. L. Littler, I. T. Yoon, and M. R. Loloee, "A New Type of Spectroscopy for Impurity of Defect Levels of Narrow Gap Semiconductors: Application to n-HgCdTe", Bull. Amer. Phys. Soc. 36, 502 (1991).
  130. Invited: D. G. Seiler, S. Mayo, and J. R. Lowney, "HgCdTe Materials Characterization Measurements: Current Practice and Future Needs," at the 1991 Meeting of the IRIS Specialty Group on Infrared Materials, Boulder, CO, August 12-13, 1991.
  131. C. L. Littler, E. Maldonado, J. R. Elkind, D. G. Seiler, and J. R. Lowney, "Investigation of Hg Interstitials in  $Hg_{1-x}Cd_xTe$  Using Hot-Electron Relaxation-Impact Ionization Spectroscopy," presented at the 1991 U.S. Workshop on the Physics and Chemistry of Mercury Cadmium Telluride and Other II-VI Compounds, Dallas, Texas, October 8-10, 1991.
  132. J. J. Kopanski, J. R. Lowney, D. B. Novotny, D. G. Seiler, A. Simmons, and J. Ramsey, "High-Spatial-Resolution Resistivity Mapping Applied to MCT," presented at the 1991 U.S. Workshop on the Physics and Chemistry of Mercury Cadmium Telluride and Other II-VI Compounds, Dallas, Texas, October 8-10, 1991.
  133. D. G. Seiler, J. R. Lowney, C. L. Littler, and X. N. Song, "Characterization of HgCdTe Infrared Detectors with the Shubnikov-de Haas Effect," Bull. Amer. Phys. Soc. 37, 580 (1992).
  134. C. L. Littler, E. Maldonado, X. N. Song, J. L. Elkind, D. G. Seiler, and J. R. Lowney, "Investigation of Mercury Interstitials in  $Hg_{1-x}Cd_xTe$  Using Resonant Impact Ionization Spectroscopy," Bull. Amer. Phys. Soc. 37, 498 (1992).
  135. J. R. Lowney, D. G. Seiler, W. R. Thurber, Z. Yu, X. N. Song, and C. L. Littler, "Heavily Accumulated Surface of MCT Detectors: Theory and Experiment," U.S. Workshop on the Physics and Chemistry of Mercury Cadmium Telluride and Other IR Materials, Danvers, MA, Oct. 1992.
  136. D. G. Seiler, J. R. Lowney, and S. Mayo, "Importance and Use of  $Hg_{1-x}Cd_xTe$  Characterization Measurements," March APS Meeting, Vol. 38, 634, 1993.
  137. Invited: D. G. Seiler, "Metrology Needs for Optical Measurement and Materials Technology Group Activities at NIST," at the Analytical Technology Infrastructure Workshop, Austin, TX, March 9-10, 1993.
  138. D. G. Seiler, "Review of Semiconductor Work at NIST, Office of Technology Assessment, Mar. 1993.
  139. Invited: D. G. Seiler, "Overview of the Semiconductor Electronics Division," to the CCG Government Coordinating Group, Dec. 1995.
  140. Invited: D. G. Seiler, "Semiconductors: Still a Wide Open Frontier for Scientists/Engineers," Emory University, Atlanta, GA, December 6, 1996.
  141. D. G. Seiler, "Compound Semiconductors," at NIST Boulder, CO, June 2, 1997.
  142. Invited: D. G. Seiler, "Characterization Modeling, Diagnostics, and Reliability of Gate Oxides," SRC Topical Research Conference on Advanced Gate Dielectrics, Austin, Texas, October 1, 1997.
  143. Invited: D. G. Seiler, "Semiconductors: Still a Wide Open Field for Scientists/Engineers," Fall 1997 Section Meeting of the American Physical Society and the American Association of Physics Teachers, University of North Texas, Denton, Texas, October 11, 1997.
  144. Invited: D. G. Seiler, "Overview of the National Institute of Standards and Technology," National Science Foundation's Centers of Research Excellence in Science and Technology (CREST) Workshop in Nashville, Tennessee, Oct. 16-17, 1997. The CREST program supports the enhancement of research and education at the most productive minority institutions in the U.S.
  145. Invited: D. G. Seiler, SED Overview for the SED NRC Assessment Panel, February 11, 1998.
  146. Invited: D. G. Seiler, SED Overview for the EEEL NRC Assessment Panel, February 12, 1998.
  147. Invited: D. G. Seiler and S. Knight, "NIST and the Metrology Needs of the Semiconductor Industry," presented at the SEMICON/West Symposium Material Characterization Strategy for the Giga-Bit DRAM Era II, July 15, 1998.
  148. Invited: D. G. Seiler, SED Overview for the EEEL NRC Assessment Panel, February 10, 1999.
  149. Invited: D. G. Seiler, SED Overview for the EEEL NRC Assessment Panel, February 15, 2000.
  150. Invited: D. G. Seiler, "Spectroscopies for Semiconductor Manufacturing" at the Symposium on Spectroscopies of

Semiconductors: Science and Technology, October 21, 2000, Purdue University.

151. Invited: D. G. Seiler, "Challenges of Metrology and Characterization Measurements for ULSI Technology" on November 22, 2000, at the 4<sup>th</sup> R&D Institute for Photonics Engineering (RIPE) Symposium Meeting in Tokyo, Japan.
152. Invited: D. G. Seiler, "Metrology Challenges for Ultra-Large-Scale-Integration (ULSI) Technology" on November 24, 2000, a lecture at Hiroshima University given at the Research Center for Nanodevices and Systems in Hiroshima.
153. Invited: D. G. Seiler, "Overview of Semiconductor Work at the National Institute of Standards and Technology," Texas Instruments, January 10, 2001.
154. Invited: D. G. Seiler, SED Overview for the EEEL NRC Assessment Panel, February 13, 2001.
155. Invited: D. G. Seiler, SED Overview for the EEEL NRC Assessment Panel, February 5, 2002.
156. Invited: D. G. Seiler, "Overview of Semiconductor Work at NIST," NIST, Gaithersburg, MD, to high-level Finland delegation, October 15, 2002.
157. Invited: D. G. Seiler, AML Presentation, NIST, Gaithersburg, MD, January 2003.
158. Invited: D. G. Seiler, SED Overview for the EEEL NRC Assessment Panel, February 2003.
159. Invited: D. G. Seiler, "Overview of Semiconductor Work at NIST," NIST, Gaithersburg, MD, to Dr. Lal, Director of NPL in India, February 24, 2003.
160. Invited: D. G. Seiler, Presentation to high-level OMB visitors, NIST, Gaithersburg, MD, August 25, 2003.
161. Invited: D. G. Seiler, "Semiconductor Metrology at NIST," Metrology Update Webcast, Semiconductor International Magazine, September 2003.
162. Invited: D. G. Seiler, "Breakthroughs in Semiconductor Metrology," Texas Instruments, November 21, 2003.
163. Invited: D. G. Seiler, 2005 Industrial Physics Forum presentation, NIST, Gaithersburg, January 2004
164. Invited: D. G. Seiler, "Breakthroughs in Semiconductor Metrology," University of Texas at Dallas, Dallas, TX, March 2, 2004.
165. Invited: D. G. Seiler, "Overview of NIST and Semiconductor Metrology," Intel, May 5, 2004.
166. Invited: D. G. Seiler, "Nanoelectronics at NIST: Enabling the Transition from Nanoscience to Nanomanufacturing," NSF, NNI Meeting, December 17, 2004.
167. Invited: D. G. Seiler, SED Overview for the EEEL NRC Assessment Panel, February 2005.
168. Invited: D. G. Seiler, "Nanoelectronics at NIST in the SED," NIST, Gaithersburg, June 2, 2005.
169. Invited: D. G. Seiler, "Top Down or Bottom Up: Tools for Nanoelectronics," NIST/TEDCO Showcase, NIST, Gaithersburg, June 9, 2005.
170. Invited: D. G. Seiler, "NanoMetrology for Nanotechnology: Challenges and Opportunities," Korea, December 5, 2005.
171. Invited: D. G. Seiler, "Semiconductors/Nanoelectronics at NIST," KRISS, Korea, December 12, 2005.
172. Invited: D. G. Seiler, "Extending CMOS Measurements to the Nanoscale: An Innovation Challenge," ICMI'06, March 8, 2006.
173. Invited: D. G. Seiler, "Government Jobs for Physicists: Believe It or Not – Challenging and Satisfying!," March APS Meeting, March 15, 2006.
174. Invited: D. G. Seiler, "Metrology Needs for the Nano Era: Characterization Challenges," SEMICON West, July 13, 2006.
175. Invited: D. G. Seiler, Overview of the Semiconductor Electronics Division, NRC Panel Review, April 2007.
176. Invited: D. G. Seiler, "Semiconductor Electronics Division Report to EIAC," Oct. 2007
177. Invited: D. G. Seiler, "Nanoelectronics and Nanometrology: What's the Latest Buzz," Michigan State University, Nov. 2007
178. Invited: D. G. Seiler, "Overview of the Semiconductor Electronics Division," Intel, Dec. 2007
179. Invited: D. G. Seiler and M. Postek, "Metrology, Nanocharacterization, and Instrumentation for Emerging Nanotechnology and Nanoelectronics," IEDM Tutorial, December 2007.
180. Invited: D. G. Seiler, "Nanoelectronics at the National Institute of Standards and Technology," NRI e-Workshop, Feb. 2008
181. Invited: D. G. Seiler, "NIST's Perspective on Bioelectronics," SRC and NIST BERT, Nov. 2008.
182. Invited: D. G. Seiler, "National Institute of Standards and Technology and the NRI," Annual NRI Review Meeting Dec. 2008.
183. Invited: D. G. Seiler, "Overview of the Semiconductor Electronics Division," NRC Panel, Mar. 2009.
184. Invited: D. G. Seiler, "Bioelectronics: Opportunities for Discovery and Innovation," NRC Panel, Mar. 2009.
185. Invited: D. G. Seiler, "NIST: Promoting U.S. Innovation and Industrial Competitiveness," ICCI Meeting, Jun. 2009.
186. Invited: D. G. Seiler, "NIST Welcomes the NRI," NIST, Oct. 2009.

187. Invited: D.G. Seiler, "Physics: a Path to a Challenging and Satisfying Career," Purdue University, Nov. 2009.
188. Invited: D.G. Seiler, "NIST Plans, Highlights, and Nanoelectronics Collaborations," ICCI Meeting, Baltimore, MD, Dec. 2009.
189. Invited: D. G. Seiler, "Nanoelectronics at NIST: What's the Latest Buzz," Centre for Research on Adaptive Nanostructures and Nanodevices, Feb. 2010.
190. Invited: D.G. Seiler, "Physics Careers in Government Agencies," American Physical Society Meeting, Mar. 2010.
191. Invited: D.G. Seiler, "Plans, Highlights, and Collaborations in Nanoelectronics," ICCI, Jun. 2010.
192. Invited: D.G. Seiler, "NIST and the NRI," Annual NRI Review Meeting, Gaithersburg, MD, Oct. 2010.
193. Invited: D.G. Seiler, "Update on NIST and the Microelectronics / Semiconductor Industry," ICCI Meeting, Dec. 2010.
194. Invited: D.G. Seiler, "Update on NIST and the Microelectronics / Semiconductor Industry," ICCI Meeting, Jun. 2011.
195. Invited: D.G. Seiler, "NIST and the NRI," Annual NRI Review Meeting, Rockville, MD, Oct. 2011.
196. Invited: D.G. Seiler, "Support for Semiconductor Manufacturing (Including Beyond CMOS Efforts)," VCAT, Gaithersburg, MD, Oct. 2011.
197. Invited: D.G. Seiler, "NIST Updates and Highlights," ICCI Meeting, Washington, D.C., Dec. 2011.