CURRICULUM VITAE

01/August/2010

Name **David Young Smith**

Address 16 Summit Circle
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or Department of Physics, Cook Bldg.
University of Vermont
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Profession Physicist specializing in solid state physics, especially optical and electronic properties.

Education

Rensselaer Polytechnic Institute, 1952-1956 BS (Physics)
Princeton University, 1956-1957, NSF Fellow
University of Rochester, 1957-1962, Ph.D. (Physics),
Advisor: D. L. Dexter
University of Illinois, Research Associate 1962-1963 Solid-State Physics,
Mentor: F. Seitz

Professional Experience

6/98 - Present	University of Vermont Professor of Physics or Emeritus Professor
1/86 - 6/98	University of Vermont Professor and Chair, Department of Physics
3/67 - 1/86 1974-1979	Argonne National Laboratory, Physicist Assistant Director, Solid State Science Division
3/66 - 2/67	Universität Stuttgart NSF Postdoctoral Fellow
3/63 - 8/63 9/63 - 2/66	University of Illinois Research Associate Research Assistant Professor and Assistant Professor
7/60 - 3/62	University of Rochester Teaching and Research Assistant
6/55 - 9/55 & 6/57 - 9/57	General Electric Research Laboratories, Scientific Assistant

Concurrent Posts

06/99 – Present	Argonne National Laboratory; DEP Faculty Appointee, Physics Division
05/93 - 08/93	US Naval Research Laboratory; Consultant
09/79 - 12/80	Universität Stuttgart and Max-Planck Institut für Festkörperforschung; Guest Professor
10/75 - 12/75	Universität Stuttgart; DAAD Fellow
01/74 - 06/79	Assistant Division Director, Solid State Science Division, Argonne National Laboratory
09/71 - 06/72	Michigan State University; Visiting Associate Professor

Awards and Honors

Faculty Research Associate and Office of Naval Research Faculty Fellowship, 1993, American Society for Engineering Education

DAAD Fellowship, 1975, Deutsche Akademische Austausch Dienst

NSF Postdoctoral Fellowship, 1966, National Science Foundation

NSF Predoctoral Fellowships, 1956-1960, National Science Foundation

Theses and Dissertations Directed

David Citrin, "Evaluation of X-Ray Cross-Section Data," 1985

Ann Williamson, "X-Ray Mirrors," 1983

Gerald Graham, "Applications of Optical Sum Rules to Reflectivity and Defects in Insulators," 1979

Corinne M. Manogue, "Finite Energy Sum Rules for Infrared Reflection Spectroscopy," 1976

M. Shaheen Malghani, "Continuum Resonances in Localized Quantum States," Ph.D. Fall, 1991.

John Kidder, "Diamond-Like Carbon Films," M.S. Fall, 1991
Timothy Linger, "An Automated X-ray Diffractometer," M.S. Fall, 1992.

Carrie E. Black, "Reflectance Spectra of Titanium-Containing Glasses," EUREA B.S. Research Project, 2004-2005

Postdoctoral Scholars Sponsored

Eugene J. Shiles - Dispersion Relations and Optical Properties
Argonne National Laboratory, 1977

John H. Barkyoumb - X-Ray Optical Properties
University of Vermont, 1987 - 1990

William Karstens - Optical Properties of Silicon
University of Vermont, 1990 - 1992

Grant support while at the University of Vermont (1986-Present)

Properties of Materials at X-Ray Wavelengths, $230,532, NSF/VT EPSCoR (1986-92).

Development of an X-Ray Physics Laboratory, $67,670, NSF (1990-93).

Computational studies of Quantum Models, $4,000, University Committee on Research and Scholarship (1998).

Electromagnetic Properties of Matter at X-Ray Wavelengths, $441,800, DOE (2001-2006).

Professional Activities

Professional Committee Service (1984-Present)

Organizer and Co-chairman, SPIE Conference on "X-ray and VUV Interaction Data Bases, Calculations, and Measurements," Los Angeles, January 1988.

Invited panelist and Editor, "DOE study on Theory and Computer Simulation of Materials Structures and Imperfections," Houghton, Michigan, August 1984.

Member, organizing committee, "Workshop on Scientific Opportunities with a 6 GeV Synchrotron Radiation Source," Argonne National Laboratory, May 1984.

Proposal Reviewing

DOE, EPSCoR, and NSF

Publication Reviewing

Applied Physics Letters, Journal of Applied Physics, Applied Physics Letters, Journal of Chemical Physics, Journal of Physical Chemistry, Journal of the Physics and Chemistry of Solids, Physical Review, Physical Review Letters, Proceedings of SPIE, etc.

University Service

Member, Search Committee for Chairman, Department of Mathematics and Statistics, 1987-1988.

Member, Dean's Search Committee, College of Engineering & Mathematics, 1987-1988.

Member, Review Committee for J. Lubker, Chair, Dept. of Communications Science and Disorders, College of Arts & Sciences, 1990.

Member, Arts & Sciences Taskforce on Mechanics of Curriculum Delivery, 1992.

Member, Arts and Sciences Committee on Computer Registration 1996-1997.

Courses taught at University of Vermont

Semester	Course			Class Size
S 1986	Phys.	155	Optics	16
F 1986	Phys.	273	Quantum Mechanics I	14
S 1987	Phys.	254	Atomic & Nuclear Physics	7
F 1987	----	----		
S 1988	Phys.	21	Introductory Laboratory I	192
F 1988	Phys.	254	Atomic & Nuclear Physics	7
S 1989	Phys.	242	Introduction to Solid State Physics	7
F 1989	Phys.	21	Introductory Laboratory I	184
S 1990	Phys.	242	Introduction to Solid State Physics	10
F 1990	Phys.	21	Introductory Laboratory I	182
S 1991	Phys.	254	Atomic & Nuclear Physics	6
F 1991	Phys.	351	Physics of Materials (Superconductivity)	5
S 1992	Phys.	242	Introduction to Solid State Physics	21
F 1993	Phys.	341	Solid State Physics I	4
S 1994	Phys.	342	Solid State Physics II	5
F 1994	Phys.	125	Electromagnetism and Optics	44
S 1995	Phys.	362	Quantum Mechanics II	3
F 1995	Phys.	42	Electromagnetism and Modern Physics	43
S 1996	Phys.	242	Introduction to Solids State Physics	10

F 1996	Phys.	42	Electromagnetism and Modern Physics	57
S 1997	Phys.	295/341	Solid State Physics	9
F 1997	Phys.	42	Electromagnetism and Modern Physics	50
S 1998	Phys.	242	Introduction to Solid State Physics	11
F 1998	Phys.	42	Electromagnetism and Modern Physics	47
			Phys. 42, Recitation	21
S 1999	Phys.	42	Electromagnetism and Modern Physics	43
	Phys.	42	Recitation	23
	Phys.	296	Crystallography	1
F 2000	Phys.	31	Introductory Physics	49
	Phys.	31	Recitation	25
S 2001	Phys.	31	Introductory Physics	88
	Phys.	31	Recitation	24
F 2002	Phys.	201	Experimental Physics (X-ray Diffraction)	8
F 2003	Phys.	201	Experimental Physics (X-ray Diffraction)	7
F 2004	Phys.	201	Experimental Physics (X-ray Diffraction)	7
F 2005	Phys.	201	Experimental Physics (X-ray Diffraction)	9
F 2006	Phys.	201	Experimental Physics (X-ray Diffraction)	7
F 2007	Phys.	201	Experimental Physics (X-ray Diffraction)	7
S 2008	Phys.	202	Experimental Physics (X-ray Diffraction)	4
F 2008	Phys.	201	Experimental Physics (X-ray Diffraction)	8
F 2009	Phys.	201	Experimental Physics (X-ray Diffraction)	5
F 2010	Phys.	201	Experimental Physics (X-ray Diffraction)	scheduled

Research Publications -- Edited Volumes and Book Chapters

1. D. Y. Smith and D. L. Dexter, *Optical Absorption Strengths of Defects in Insulators*, Progress in Optics, Vol. X, E. Wolf editor, (North-Holland Publishing Co., Amsterdam, 1972), pp. 165-228.

2. D. Y. Smith, *Dispersion Theory and Moments Relations in Magneto-Optic*, Theoretical Aspects and New Developments in Magneto-Optics, J. Devreese editor, NATO Advanced Study Institute Series, Vol. 60, (Plenum Press, New York, 1981), pp. 133-182.

3. D. Y. Smith, *Dispersion Theory, Sum Rules, and their Applications to the Analysis of Optical Data*, Handbook of Optics, E. Palik editor (Academic Press, New York, 1985).

4. D. Y. Smith, E. J. Shiles, and M. Inokuti, *The Optical Properties of Aluminum*, Handbook of Optics, E. Palik editor (Academic Press, New York, 1985).

5. N. K. Del Grande, P. Lee, J. A. R. Sampson, and D. Y. Smith, editors, *X-Ray and VUV Interaction Data Bases, Calculations, and Measurements*, Proc. SPIE, Vol **911**, SPIE-The International Society for Optical Engineering, Bellingham, Washington (1988).

Research Papers -- Journal Articles and Research Reports

1. David Y. Smith, *A Variational Theory of Paramagnetic Impurities in Van der Waals Crystals*, Ph.D. Thesis, University of Rochester, Rochester, New York (1962). Available through University Microfilms, Ann Arbor, Michigan.

2. David Y. Smith, *Variational Theory of Paramagnetic Impurities in Van der Waals Crystals*, Phys. Rev. **131** (5), 2056-2069 (September 1963).

3. David Y. Smith, *Calculation of the g Factor of Hydrogen and the Alkali Atoms Trapped in Rare-Gas Solids*, Phys. Rev. **131** (4A), A1087-A1097 (February 1964).

4. David Y. Smith, *The Theory of Spin-Orbit Effects in the F Band in Alkali Halides*, Phys. Rev. **137** (2A), A574-A582 (January 1965).

5. D. Y. Smith and Giorgio Spinolo, *Optical Absorption and Photoconductivity in the K Band of Some Colored Alkali Halides*, Phys. Rev. **140** (6A), A2117-A2120 (December 1965).

6. D. Y. Smith and Giorgio Spinolo, *On the K Band in Colored Alkali-Halide Crystals*, Phys. Rev. **140** (6A), A2121-A2129 (December 1965).

7. W. B. Fowler, E. Calabrese and D. Y. Smith, *Excited States of the F Center in Alkali Halides*, Solid State Commun. **5** (8), 569-571 (August 1967).

8. D. Y. Smith, *Possibility of Rare-Gas Color Centers in Ionic Crystals*, Phys. Rev. **166** (3), 848-855 (February 15, 1968).

9. D. Y. Smith, *Filling the Holes in the Lattice*, Science News **93** (7), 168 (February 17, 1968).

10. D. Y. Smith, *Spin-Orbit Splitting of the K Band in Colored Alkali Halides*, Solid State Commun. **8** (21), 1677-1681 (November 1970).

11. D. Y. Smith, *Spin-Orbit Effects in the F and K Bands of Colored Alkali Halides*, Phys. Rev. B **6** (2), 565-581 (July 15, 1972).

12. M. Altarelli, D. L. Dexter, H. M. Nussenzveig, and D. Y. Smith, *Superconvergence and Sum Rules for the Optical Constants*, Phys. Rev. B **6** (12), 4502-4509 (December 15, 1972).

13. Lloyd G. Lewis, David Y. Smith, and Sherman Susman, *Photothermal and Photoelectric Conversion of Solar Energy*, The Solar Energy Evaluation Group, E. H. Appelman, Ed., Argonne National Laboratory Report 8045 (August 1973) pp. 21-32.

14. D. Y. Smith, *Localized Orbital Moments of Defects in Insulators--The F Center*, Phys. Rev. B **8** (8), 3939-3953 (October 15, 1973).

15. M. Altarelli and D. Y. Smith, *Superconvergence and Sum Rules for the Optical Constants: Physical Meaning,Comparison with Experiment, and Generalization*, Phys. Rev. B **9** (4), 1290-1298 (February 15, 1974) and Phys. Rev. B **12** (8), 3511 (October 15, 1975).

16. D. Y. Smith, *Comments on the Dispersion Relations for the Complex Refractive Index of Circularly and Elliptically Polarized Light*, J. Opt. Soc. Am. **66** (5), 454-460 (May 1976).

17. D. Y. Smith, *Dispersion Relations and Sum Rules for Magnetoreflectivity*, J. Opt. Soc. Am. **66** (6), 547-554 (June 1976).

18. D. Y. Smith, *Superconvergence and Sum Rules for the Optical Constants: Natural and Magneto-Optical Activity*, Phys. Rev. B **13** (12), 5303-5315 (June 15, 1976).

19. D. Y. Smith, *Dispersion Relations for Complex Reflectivities*, J. Am. Opt. Soc. **67** (4), 570-571 (April 1977).

20. D. Y. Smith and E. Shiles, *Finite-energy f Sum Rules for Valence Electrons*, Phys. Rev. B **17** (12), 4689-4694 (June 15, 1978).

21. D. Y. Smith and G. Graham, *Oscillator Strengths of Defects in Insulators: The Generalization of Smakula's Equation*, J. de Physique **41**, C6-80 - C6-83 (1980).

22. D. Y. Smith and E. Shiles, *Superconvergence Relations and the Analysis of Optical Data*, Basic Optical Properties of Materials, A. Feldman, editor, N. B. S. Special Publication No. 574 (U.S. Government Printing Office, Washington, D. C., 1980), pp. 28-31.

23. E. Shiles, Taizo Sasaki, Mitio Inokuti, and D. Y. Smith, *Self-Consistency and Sum-Rule Tests in the Kramers-Kronig Analysis of Optical Data: Applications to Aluminum*, Phys. Rev. B **22** (4), 1612-1628 (August 15, 1980).

24. D. Y. Smith and E. Shiles, *Oscillator Strength Sums and Effective Number in the Optical Spectroscopy of Solids*, Recent Developments in Condensed Matter Physics, J. T. Devreese, V. E. Van Doren, and J. Van Royan editors (Plenum Press, New York, 1981), Vol. 3, pp. 323-331.

25. D. Y. Smith and Corinne A. Manogue, *Superconvergence Relations and Sum Rules for Reflection Spectroscopy*, J. Opt. Soc. Am. **71** (8), 935-947 (August 1981).

26. Mitio Inokuti and David Y. Smith, *The Fermi Density Effect on the Stopping Power of Metallic Aluminum*, Phys. Rev. B **25** (1), 61-66 (January 1982).

27. D. Y. Smith, E. Shiles, and M. Inokuti, *The Optical Properties and Complex Dielectric Function of Metallic Aluminum from 0.04 to 10^4 eV*, Argonne National Laboratory Report 83-24 (March 1983).

28. D. Y. Smith, H. J. Paus, M. Rapp, and W. Wenzel, *Impurity-Ligand Effects on the Magneto-Optically Measured Spin-Orbit Splitting of Trapped Electron Centers*, Radiat. Eff. **72** (1-4), 89-96 (1983).

29. W. Primak, C. J. Delbecq, and D. Y. Smith, *Comment on the Possibility of Securing Experimental Data for Very Short Times and the Determination of Initial Yields*, Proceedings of the Workshop on the Interface Between Radiation Chemistry and Radiation Physics, M. A. Dillon, et al., eds., Argonne National Laboratory Report 82-88 (March 1983) pp. 129-130.

30. D. Y. Smith, and A. H. Harker, *Spin-Orbit Effects in Non-Central Force Systems: Host Lattice Effects in F Centers*, Phys. Rev. Lett. **52**, 73-76 (1984).

31. F. A. Modine, R. W. Major, T. W. Haywood, G. R. Gruzalski, and D. Y. Smith, *Optical Properties of Tantalum Carbide from the Infrared to the Near Ultraviolet*, Phys. Rev. B **29**, 836-841 (1984).

32. D. Y. Smith, and A. H. Harker, *Host-Lattice Effects in the Spin-Orbit Fine Structure of Vacancy-Trapped Electrons*, Nucl. Instrum. Methods **229**, B1, part 2, 445-451 (1984).

33. F. A. Modine and D. Y. Smith, *Approximate Formulas for the Amplitude and Phase of the Infrared Reflectance of a Conductor*, J. Opt. Soc. Am. A **1**, 1171-1174 (1984).

34. D. M. Hofmann, F. Lohse, H. J. Paus, D. Y. Smith, and J.- M. Spaeth, *Optically Detected Spin Resonance of F_2^+ and $(F_2^+)^*$ Centers in NaF*, J. Phys. C **18**, 443-454 (1985).

35. D. Y. Smith, A. E. Williamson, and T. I. Morrison, *Optical Constants at X-Ray Wavelengths*, Basic Properties of Optical Materials, A. Feldman, Editor, N.B.S. Special

Publication No. **697** (U.S. Government Printing Office, Washington, DC, 1985) pp. 177-180.

36. D. Y. Smith and B. Segall, *Separation of Drude and Band-to-Band Spectra in Polyvalent Metals*, Basic Properties of Optical Materials, A. Feldman, Editor, N.B.S. Special Publication No. **697** (U.S. Government Printing Office, Washington, D.C., 1985) pp. 28-31.

37. Hans Bichsel, Mitio Inokuti, and David Y. Smith, *Mean Excitation for the Stopping Power of Metallic Aluminum: Comments on McGuire's Article*, Phys. Rev. A **33**, 3567-3571 (1986).

38. D. Y. Smith and B. Segall, *Intra- and Interband Processes in the Infrared Spectrum of Metallic Aluminum*, Phys. Rev. B **34**, 5191-5198 (1986).

39. D. Y. Smith, *Anomalous X-Ray Scattering: Relativistic Effects in X-Ray Dispersion Analysis*, Phys. Rev. A **35**, 3381-3387 (1987).

40. D. Y. Smith, *Reconciliation of Dispersion Theory with Experiment in Anomalous X-Ray Scattering*, Phys. Lett. **123**, 200-204 (1987).

41. D. Y. Smith, *X-Ray Optical Properties: A Review of the Constraints and the Data Base*, Proc. SPIE **911**, 86-99 (1988).

42. J. H. Barkyoumb and D. Y. Smith, *Recent Advances in the Calculation of X-Ray Optical Constants*, Proc. SPIE **911**, 136-143 (l988).

43. J. H. Barkyoumb and D. Y. Smith, *The Forward X-Ray Scattering Factor of Copper from a Self-Consistent Data Base*, Phys. Lett. A **143**, 462-466 (1990).

44. J. H. Barkyoumb and D. Y. Smith, *X-Ray Scattering Factors of Metallic Aluminum Calculated from a Self-consistent X-ray Attenuation Data Base*, Phys. Rev. A **41**, 4863-4867 (1990).

45. J. H. Barkyoumb and D. Y. Smith, *Forward X-Ray Scattering Factors and Optical Constants for Metallic Aluminum*, AIP Physics Auxiliary Publication Service Document Number PLRAA-41-4863-07, American Institute of Physics (New York, 1990).

46. D. Y. Smith and J. H. Barkyoumb, *Sign Reversal of the Atomic Scattering Factor and Grazing-Incidence Transmission at X-Ray Absorption Edges*, Phys. Rev. B **41**, 529-535 (1990).

47. J. H. Barkyoumb and D. Y. Smith, *Reflectance and Transmittance of Aluminum Metal as a Function of Angle from 20 eV to 10 keV*, AIP Physics Auxiliary Publication Service Document Number PLRBMD 41-11529-24, American Institute of Physics (New York, 1990).

48. D. Y. Smith and J. Barkyoumb, *Improved Values of the Forward X-Ray Scattering Factor for Metallic Aluminum*, Acta Cryst. A **46**, 630-632 (1990).

49. M. S. Malghani and D. Y. Smith, *The Glasner-Tompkins Relations Between F-Center and Exciton Absorption in Ionic Solids*, J. Phys. Chem. Sol. **53**, 831-840 (1992).

50. M. S. Malghani and D. Y. Smith, *Physical Basis of the Mollwo-Ivey Relation between Lattice Constant and Optical Absorption of Defects in Ionic Crystals*, Phys. Rev. Lett. **69**, 184-187 (1992).

51. M. S. Malghani and D. Y. Smith, *An Electron-Transfer Theory of the Glasner-Tompkins Relation between F-Center and Exciton Spectra*, Proc. XII International Conference on Defects in Insulating Materials, O. Kanert and J.M. Spaeth, editors, pp. 483-485 (World Scientific, Singapore, 1993).

52. D. Y. Smith and M. S. Malghani, *A General Theory of the Mollwo-Ivey Law and the Ivey Exponent*, Proc. XII International Conference on Defects in Insulating Materials, O. Kanert and J. M. Spaeth, editors, pp. 235-237 (World Scientific, Singapore, 1993).

53. M. S. Malghani and D. Y. Smith, *A Theory of the Mollwo-Ivey Law for Defect Absorption and its Correlation to the Stokes Shift in Emission*, J. Luminescence, **60** and **61**, 599-602 (1994).

54. M. S. Malghani and D. Y. Smith, *Calculation of the Mollwo-Ivey Parameters in the Point-Ion Approximation,* Radiat. Eff. **134**, 101-106 (1995).

55. M. S. Malghani and D. Y. Smith, *Host-Lattice Scaling of Defect Quantum States,* Materials Science Forum, **239-241**, 365-368 (1997).

56. D. Y. Smith and M. S. Malghani, *Effective-Mass Effects on Localized Defects in Ionic Solids: Kinetic Confinement*, Materials Science Forum, **239-241**, 369-372 (1997).

57. D. Y. Smith and M. S. Malghani, *Configuration of the Self-Trapped Exciton in the Alkali Halides,* Journal of Luminescence, **72-74,** 887-889 (1997).

58. D. Y. Smith, *Optical Determination of the Spatial Extent of Defects in Insulators,* Nuclear Instruments and Methods in Physics Research, **141**, 42-48 (1998).

59. D. Y. Smith, *Pauli-Principle Effects in the Analysis of Optical Spectra,* Radiation Effects, **149**, 209-214 (1999).

60. D. Y. Smith and William Karstens, *X-Ray Core States, Atomic Size and Moseley's Law*, Nuclear Instruments and Methods in Physics Research B, **166-167**, 51-56 (2000).

61. D. Y. Smith, Mitio Inokuti, and W. Karstens, *Photoresponse of Condensed Matter Over the Entire Range of Excitation Energies: Analysis of Silicon*, Physics Essays **13**, 465-470 (2000) [Invited paper in Festschrift for Prof. Ugo Fano].

62. D. Y. Smith and Mitio Inokuti, *Ion-Size Effects and the Spatial Extent of Defects,* Radiation Effects and Defects in Solids **155**, 43-49 (2001).

63. D. Y. Smith, Mitio Inokuti and W. Karstens, *A Generalized Cauchy Dispersion Formula and the Refractivity of Elemental Semiconductors*, Journal of Physics: Condensed Matter **13**, 3883-3893 (2001).

64. W. Karstens, and D. Y. Smith, *Defect Signatures in Dispersion Spectra*, Nucl. Instr. and Meth. in Phys. Res. B **191**, 44-47 (2002).

65. D. Y. Smith, Mitio Inokuti and W. Karstens, *Cauchy's Dispersion Equation Reconsidered: Dispersion in Silicate Glasses*, Radiation Effects and Defects in Solids, **157**, 823-828 (2002).

66. D. Y. Smith, E. Shiles, and M. Inokuti, *Refraction and Dispersion in Optical Glass,* Nucl. Instr. and Meth. in Phys. Res. B **218**, 170-175 (2004).

67. D. Y. Smith, E. Shiles, and M. Inokuti, *Ultraviolet color centers and refraction in silicate glasses*, phys. stat. sol. (c) **2** [1], 310-313 (2005).

68. W. Karstens, D. Bobela, and D. Y. Smith, *Impurity and Free-Carrier Effects on the Far-Infrared Dispersion Spectrum of Silicon,* J. Opt. Soc. Am. **23** [3], 723-729 (2006)

69. D. Y. Smith, M. Inokuti, W. Karstens, and E. Shiles, *Mean Excitation Energy for the Stopping Power of Light Elements*, Nucl. Instr. and Meth. in Phys. Res. B **250**, 1-5 (2006).

70. D. Y. Smith, C. E. Black, C. C. Homes, and E. Shiles, *Optical properties of TiO_2–SiO_2 glass over a wide spectral range*, phys. stat. sol. (c) **4** [3], 838-842 (2007).

71. Helmut Paul, Pedro L. Grande, D. Y. Smith, *Optical Oscillator Strengths, Mean Excitation Energy, Shell Corrections and Experimental Values for Stopping Power*, Nuclear Instruments and Methods in Physics Research B **267**, 2471–2474 (2009).

72. D. Y. Smith and W. Karstens, *The Refractive Index of Glass and Its Dispersion for Visible Light*, Journal of Physics: Conference Series (in press).

73. W. Karstens and D. Y. Smith, *Collective excitations, optical properties and the stopping power of materials*. Nuclear Instruments and Methods in Physics Research B (submitted, August 2010).

Contributed Conference Papers and Abstracts

1. D. Y. Smith, *Variational Theory of Paramagnetic Impurities in Van der Waals Crystals*, Bull. Am. Phys. Soc. **8** (4), 345 (April 1963).

2. D. Y. Smith and W. B. Fowler, *Spin-Orbit Splitting of the Excited State of the F-Center*, Bull. Am. Phys. Soc. **9** (3), 240 (March 1964).

3. *On the K Band in the Alkali Halides*, International Symposium on Color Centers in Alkali Halides, Rome, Italy, September 23-27, 1968, pp. 254-255.

4. D. Y. Smith, *Pseudopotential Theory in the Hartree-Fock Approximation and Its Applications to Localized States in Solids*, International Symposium on Color Centers in Alkali Halides, Urbana, Illinois (1965).

5. D. Y. Smith and Giorgio Spinolo, *Some Experimental and Theoretical Investigations of the K Band*, Bull. Am. Phys. Soc. **10** (8), 1086 (October 1965).

6. D. Y. Smith, *Speculations on the Existence of Rare-Gas Color Centers in Ionic Solids*, Bull. Am. Phys. Soc. **13** (1), 73 (January 1968).

7. D. Y. Smith and D. L. Dexter, *The Non-Existence of f-Sum Rules for Imperfections in Solids*, Bull. Am. Phys. Soc. **13** (3), 439 (March 1968).

8. D. Y. Smith, *The Faraday Effect - A Case of the Inapplicability of the Kramers-Kronig Relations*, 1968 International Symposium on Color Centers in Alkali Halides, Rome, Italy, September 23-27, 1968, p. 252-254.

9. D. Y. Smith, *The f-Sum Rule, Smakula's Equations, and the Oscillator Strengths of Color Centers*, 1968 International Symposium on Color Centers in Alkali Halides, Rome, Italy, September 23-27, 1968, p. 254-255.

10. D. Y. Smith, *Spin-Orbit Effects in the F and K Bands of Colored Alkali Halides*, Bull. Am. Phys. Soc. **15** (3), 339 (March 1970).

11. D. Y. Smith and D. L. Dexter, *Determination of Effective Fields at Defects in Insulators*, Bull. Am. Phys. Soc. **16** (3), 420 (March 1971).

12. D. Y. Smith, *Orbital Angular Momentum in the Excited States of Colour Centres*, 1971 International Conference on Colour Centres in Ionic Crystals, September 6-10, 1971, University of Reading, England - England - ABSTRACT - 18.

13. D. Y. Smith, *Orbit-Zeeman Effects in the F Center*, Bull. Am. Phys. Soc. **17** (3) 240 (March 1972).

14. M. Altarelli and D. Y. Smith, *Inertial Sum Rules for Optical Constants*, Bull. Am. Phys. Soc. **18** (3) 357 (March 1973).

15. D. Y. Smith, *Dispersion Relations and Sum Rules for Magneto-Reflectivity*, Bull. Am. Phys. Soc. **19** (1), 93 (January 1974).

16. D. Y. Smith, *Superconvergence Relations and Sum Rules for Circularly Polarized Optic Modes of Natural and Magneto-Optically Active Media*, Bull. Am. Phys. Soc. **19** (3), 259 (March 1974).

17. D. Y. Smith, *Superconvergence Relations, Sum Rules, and their Application to Defect Spectra*, 1974 International Conference on Color Centers in Ionic Crystals, Sendai, Japan, August 19-23, 1974, Program Book Abstract - 118.

18. D. Y. Smith, *A Second Moment Relation for Circular Dichroism*, Bull. Am. Phys. Soc. **20** (3). 335 (March 1975).

19. D. Y. Smith, *Reflectivity Sum Rules*, Bull. Am. Phys. Soc. **21** (3), 336 (March 1976)

20. E. Shiles and D. Y. Smith, *Self-Consistency Analysis of Optical Data: Aluminum*, Bull. Am. Phys. Soc. **22** (1), 92 (January 1977).

21. D. Y. Smith and E. Shiles, *Finite Energy f Sums and* n_{eff}, Bull. Am. Phys. Soc. **22** (3), 439 (March 1977).

22. D. Y. Smith and C. A. Manogue, *Finite-Energy Sum Rules for Infra-red Reflection Spectroscopy: Application to Ionic Crystals and Solar Heat Mirrors*, 1977 International Conference on Defects in Insulating Crystals, Gatlinburg, TN, October 9-14, 1977.

23. E. J. Shiles and D. Y. Smith, *The Optical Properties of Silicon from the Infrared to the X-ray Region*, Bull. Am. Phys. Soc. **23** (3), 226 (March 1978).

24. D. Y. Smith and C. A. Manogue, *Finite-Energy Sum Rules for Infrared Reflection Spectroscopy*, Bull. Am. Phys. Soc. **23** (3), 342 (March 1978).

25. D. Y. Smith, *Theory of Optical Properties of Solar Materials: Sum-Rule Constraints*, Symposium of Materials Problems Associated with Solar Energy, Arizona State University, Tempe, AZ, April 12-14, 1978, Abstract of Invited Talk.

26. D. Y. Smith, *Limits of Efficiency of Solar-Thermal Energy Conversion: "Greenhouse" Collectors and Heat Mirrors*, Bull. Am. Phys. Soc. **24** (3), 273 (March 1979).

27. E. Shiles and D. Y. Smith, *Optical Properties of Semiconductors: Gallium Arsenide*, Bull. Am. Phys. Soc. **24** (3), 335 (March 1979).

28. D. Y. Smith, *Dispersion Theory and Moments Relations in Magneto-Optics*, NATO Advanced Study Institute, Antwerp, Belgium, July 1979, Invited Lectures.

29. D. Y. Smith and G. Graham, *Oscillator Strengths of Defects in Insulators*, Third Europhysical Topical Conference on Lattice Defects, Canterbury, U.K., Sept. 1979

30. D. Y. Smith, *Superconvergence Relations and the Analysis of Optical Data*, Conference on Basic Optical Properties of Materials, National Bureau of Standards, Gaithersburg, MD, May 5-7, 1980, Invited Talk.

31. D. Y. Smith, *Oscillator Strength Sums and Effective Electron Number in Optical Spectroscopy in Solids*, 1980 Annual Conference of the Condensed Matter Division of the European Physical Society, Antwerp, Belgium, April 9-11, 1980.

32. D. Y. Smith and B. Segall, *Intra- and Interband Optical Transitions in the Conduction-Electron Spectrum of Aluminum*, Bull. Am. Phys. Soc. **26** (3), 209 (March 1981).

33. H. Paus and D. Y. Smith, *Spin-Orbit Effects in the Excited State of A_2^+ Centers in KCl*, International Conference on Defects in Insulating Crystals, Riga, Latvia, 18-23 May 1981.

34. D. Y. Smith and H. J. Paus, *Spin-Orbit Effects in Low-Symmetry Systems*, Twenty-Ninth Midwest Solid State Conference, Argonne National Laboratory, September 25-26, 1981.

35. D. Y. Smith and B. Segall, *Intra- and Interband Transitions in Aluminum*, Ninth Midwest Solid State Theory Symposium, Argonne National Laboratory, November 2-3, 1981.

36. F. A. Modine, R. W. Major, G. R. Gruzalski and D. Y. Smith, *Optical Properties of Tantalum Carbide*, Bull. Am. Phys. Soc. **27** (3), 187 (March 1982).

37. D. Y. Smith, *Spin-Orbit Effects in Low-Symmetry Systems*, Bull. Am. Phys. Soc. **27** (3), 257 (March 1982).

38. H. J. Paus, M. Rapp, W. Wenzel, and D. Y. Smith, *Impurity Ligand Effects on the Magnetooptically Measured Spin-Orbit Splitting of Trapped Electron Centers*, Fourth Europhysical Topical Conference on Lattice Defects in Ionic Crystals, Trinity College, Dublin, Ireland, August 30-September 3, 1982.

39. D. Y. Smith, D. D. Koelling, and B. Segall, *The Triplet Parallel Band Effect. Interband Fine Structure in Aluminum*, Tenth Midwest Solid State Theory Symposium, Michigan State University, East Lansing, October 8-9, 1982.

40. D. Y. Smith, D. D. Koelling, and B. Segall, *The Triplet Parallel Band Effect. Interband Fine Structure in Aluminum*, Bull. Am. Phys. Soc. **28** (3), 387 (March 1983).

41. D. Y. Smith and A. H. Harker, *A Semi-Empirical Spin-Orbit Splitting Formula for Electron-Excess Defects*, Second International Conference in Radiation Effects in Insulators, Albuquerque, New Mexico, May 30-June 3, 1983.

42. A. E. Williamson, D. Y. Smith, and T. I. Morrison, *Kramers-Kronig/F-Sum Rule Analysis for the Optical Properties of Materials at X-Ray Wavelengths*, Stanford Synchrotron Radiation Laboratory User's Group Meeting, Stanford, California, October 27-28, 1983.

43. D. Y. Smith and A. H. Harker, *Spin-Orbit Effects in a Noncentral-Force Field: Electrons Trapped at Vacancies*, Bull. Am. Phys. Soc. **29** (3), 539 (March 1984).

44. D. Y. Smith and A. H. Harker, *A Semi-Empirical Spin-Orbit Splitting Formula for Electrons Trapped at Vacancies*, International Conference on Defects in Insulating Crystals, University of Utah, Salt Lake City, Utah, August 20-24, 1984.

45. D. M. Hofmann, F. Lohse, H. J. Paus, D. Y. Smith, and J.-M. Spaeth, *Optically Detected ESR of F_2^+ and $(F_2^+)^*$ Centers in NaF*, International Conference on Defects in Insulating Crystals, University of Utah, Salt Lake City, Utah, August 20-24, 1984.

46. H. J. Paus and D. Y. Smith, *Spin-Orbit Interaction of Color Centers with Tetragonal Symmetry*, International Conference on Defects in Insulating Crystals, University of Utah, Salt Lake City, Utah, August 20-24, 1984.

47. D. Y. Smith, *Advances in the Magneto-Optic Studies of Defects*, International Conference on Defects in Insulating Crystals, University of Utah, Salt Lake City, Utah, August 20-24, 1984.

48. D. Y. Smith and A. E. Williamson, *Optical Properties for X-ray Applications*, Bull. Am. Phys. Soc. **30** (3), 580 (March 1985).

49. R. Sharma and D. Y. Smith, *A Path-Integral Formulation for Defect Energy Levels,* Bull. Am. Phys. Soc. **30** (3), 319 (March 1985).

50. D. Y. Smith, T. I. Morrison, and A. Williamson, *Basic Optical Properties of Materials at X-ray Energies*, Mat. Res. Soc. Symposium on XUV and X-ray Optics for Synchrotron Radiation, San Francisco, California, April 15-16, 1985.

51. D. Y. Smith, A. E. Williamson, and T. I. Morrison, *Optical Constants at X-ray Wavelengths*, Conference on Basic Properties of Optical Materials, National Bureau of Standards, Gaithersburg, Maryland, May 7-9, 1985.

52. D. Y. Smith and B. Segall, *Separation of Drude and Band-to-Band Spectra in Polyvalent Metals*, Conference on Basic Properties of Optical Materials, National Bureau of Standards, Gaithersburg, Maryland, May 7-9, 1985.

53. D. Y. Smith, *Anomalous X-ray Scattering: Comparison of Theory with Experiment*, Bull. Am. Phys. Soc. **31** (3), 578 (March 1986).

54. D. Y. Smith, *X-ray Scattering Factors and Dispersion Analysis of X-ray Absorption Spectra*, Bull. Am. Phys. Soc. **32** (3), 764 (March 1987).

55. J. H. Barkyoumb and D. Y. Smith, *Improved Calculations of X-Ray Scattering factors from VUV and X-Ray Attenuation Data Bases*, Bull. Am. Phys. Soc. **33** (6), 1376 (June 1988).

56. J. H. Barkyoumb and D. Y. Smith, *Grazing-Incidence Transmission at X-Ray Absorption Edges*, Bull. Am. Phys. Soc. **34** (3), 893 (March 1989).

57. J. H. Barkyoumb and D. Y. Smith, *Calculation of the Forward X-Ray Scattering Factor by Dispersion Analysis*, Annual Users' Meeting, National Synchrotron Light Source, Brookhaven National Laboratory, May 17-19, 1989.

58. M. S. Malghani and D. Y. Smith, *Continuum Resonances in Localized Quantum States*, Bull. Am. Phys. Soc. **35** (2), 99 (February 1990).

59. J. H. Barkyoumb, D. Y. Smith, and T.I. Morrison, *The Forward X-ray Scattering Factor of Copper Near Absorption Edges by Dispersion Analysis*, Bull. Am. Phys. Soc. **35** (2), 99 (February 1990).

60. D. Y. Smith, *X-Ray Optical Properties and Near-Edge Structure*, National Synchrotron Light Source X-11 PRT Annual Meeting, Brookhaven National Laboratory, January 7-8, 1990.

61. J. H. Barkyoumb, D. Y. Smith, and T. I. Morrison, *Forward Scattering Factors and Optical Constants Near the L Edges of Tantalum and Tungsten*, Bull. Am. Phys. Soc. **35** (3), 638 (March 1990).

62. W. Karstens, D. Y. Smith, and J. H. Barkyoumb, *The Forward X-Ray Scattering Factor of Silicon Determined Using a Self-Consistent Kramers-Kronig Procedure*, Bull. Am. Phys. Soc. **36** (3), 467 (March 1991).

63. M. S. Malghani and D. Y. Smith, *The Physical Basis of the Mollwo-Ivey Law*, Bull. Am. Phys. Soc. **36** (3), 992 (March 1991).

64. D. Y. Smith and M. S. Malghani, *The Glasner-Tompkins Relations Between the Spectra of F-Centers and Excitons: Physical basis and Generalizations*, Bull. Am. Phys. Soc. **36**, 992 (March 1991).

65. M. S. Malghani and D. Y. Smith, *The Physical Basis of the Glasner-Tompkins Relation Between F-Center and Exciton Spectra*, Bull. Am. Phys. Soc. **36** (5), 1681 (May 1991).

66. W. Karstens, D. Y. Smith, and J. H. Barkyoumb, *A Self-Consistent Optical and X-Ray Optical Constant Data Base for Silicon*, Bull. Am. Phys. Soc. **37** (3), 545 (March 1992).

67. M. S. Malghani and D. Y. Smith, *The Mollwo-Ivey Relations for Higher Excited States of the F Center*, Bull. Am. Phys. Soc. **37** (3), 617 (March 1992).

68. D. Y. Smith and M. S. Malghani, *A General Theory of the Mollwo-Ivey Law and the Ivey Exponent,* International Conference on Defects in Insulating Materials, Schloss Nordkirchen, Germany, 16-22 August 1992.

69. M. S. Malghani and D. Y. Smith, *An Electron-Transfer Theory of the Glasner-Tomkins Relation Between F-Center and Exciton Spectra,* International Conference on Defects in Insulating Materials, Schloss Nordkirchen, Germany, 16-22 August 1992.

70. M. S. Malghani and D. Y. Smith, *Model Calculations of the Ivey Exponent for Electron-Excess Defects in Ionic Solids*, Bull. Am. Phys. Soc. **38** (3), 740 (March 1993).

71. M.S. Malghani and D.Y. Smith, *The Mollwo-Ivey Law for Defect Absorption and its Correlation to the Stokes Shift*, International Conference on Luminescence, University of Connecticut, August 9 - 13, 1993.

72. M. S. Malghani and D. Y. Smith, *Correlation between the Stokes Shift and the Ivey Exponent,* Bull. Am. Phys. Soc. **39** (3), 498 (March 1994).

73. M. S. Malghani and D. Y. Smith, *Calculation of the Mollwo-Ivey Parameters in the Point-Ion Approximation,* Seventh Europhysical Conference on Defects in Insulating Materials, Ecole Normal Supérieur, Lyon, France, July 5-8, 1994.

74. M. S. Malghani and D. Y. Smith, *Orbital Extent of Self-Trapped Excitons in Alkali Halides,* Bull. Am. Phys. Soc. **40** (3), 342 (March 1995).

75. W. Karstens and D.Y. Smith, *Analysis of the Absorption Coefficient for Silicon in the UV/Soft X-Ray Transition Region*, Bull. Am. Phys. Soc. **41** (3), 420 (March 1996).

76. M. S. Malghani and D. Y. Smith, *Kinetic "Confinement" and "Liberation" in Localized Defects in Ionic Solids,* Bull. Am. Phys. Soc. **41** (3) 750 (March 1996).

77. D. Y. Smith and M. S. Malghani, *Effective-Mass Effects on Localized Defects in Ionic Solids: Kinetic Confinement*, 13th International Conference on Defects in Insulators, Wake Forest University, Winston-Salem, NC, 15-19 July 1996.

78. M. S. Malghani and D. Y. Smith, *Host-Lattice Scaling of Defect Quantum States,* 13th International Conference on Defects in Insulators, Wake Forest University, Winston-Salem, NC, 15-19 July 1996.

79. D. Y. Smith and M. S. Malghani, *Configuration of the Self-Trapped Exciton in the Alkali Halides*, International Conference on Luminescence, Charles University, Prague, 18-23 August 1996.

80. M. S. Malghani and D. Y. Smith, *Excitons in Alkali Halides: Analysis of Type I STE Spectra*, Bull. Am. Phys. Soc. **42** (1), 255 (March 1997).

81. D. Y. Smith and M. S. Malghani, *Optical Determination of the Spatial Extent of Defects in Insulators,* International Conference on the Radiation Effects in Insulators - 9, Knoxville, Tennessee, 14-19 September 1997.

82. D. Y. Smith and M. S. Malghani, *Dipolar Sum Rules in Many-Electron Systems*, Bull. Am. Phys. Soc. **43** (1), 302 (1998).

83. D. Y. Smith, *Pauli-Principle Effects in the Analysis of Optical Spectra,* Eighth Europhysical Conference on Defects in Insulating Materials, Keele University, United Kingdom, 7-10 July 1998.

84. D. Y. Smith and William Karstens, *Spatial Extent of X-Ray Core States*, Bull. Am. Phys. Soc. **44** (1), 308 (1999).

85. D. Y. Smith and William Karstens, *X-ray Cross Sections, Ion-Core Size and Moseley's Law*, 10th International Conference on Radiation Effects in Insulators, Friedrich-Schiller-Universität Jena, Germany, 18-23 July 1999.

86. William Karstens, D. Y. Smith and Mitio Inokuti, *The Optical Properties of Silicon Revisited*, Bull. Am. Phys. Soc. **45** (1), 742 (2000).

87. D. Y. Smith and M. Inokuti, *Ion-Size Effects and the Spatial Extent of Defects*, International Conference on Defects in Insulating Materials, University of the Witwatersrand, South Africa, 3-7 April 2000.

88. D. Y. Smith and William Karstens, *Infrared Optical Properties of Diamond*, Bull. Am. Phys. Soc. **46** (1), 984 (2001).

89. W. Karstens, and D. Y. Smith, *Defect Signatures in Dispersion Spectra*, 11th International Conference on Radiation Effects in Insulators, Lisbon, Portugal, 03-07 September 2001.

90. D. Y. Smith and W. Karstens, *Dispersion Theory of Optical Glass*, Bull. Am. Phys. Soc. **47** [1, Part I], 293-294 [D28-2] (2002).

91. W. Karstens, D. Bobela, and D. Y. Smith, *Effect of Impurities on the Far-Infrared Dispersion Spectra in Silicon*, Bull. Am. Phys. Soc. **47** [1, Part II], 992 [S17-4] (2002).

92. D. Y. Smith, M. Inokuti, and W. Karstens, *Cauchy's Dispersion Equation Reconsidered: Dispersion in Silicon and Disordered Silicate Systems*, 9th Europhysical Conference on Defects in Insulating Materials (EURODIM), Wrocław 30 June - 5 July 2002.

93. D. Y. Smith, *Dispersion Relations for X-Ray Faraday Rotation and Magnetic Circular Dichroism*, Bull. Am. Phys. Soc. **48**, 194 (2003).

94. E. J. Shiles, M. Inokuti, W. Karstens, and D. Y. Smith, *Surface Effects and UV Optical Properties of Silicon*, Bull. Am. Phys. Soc. **48**, 890 (2003).

95. D. Y. Smith, and M. Inokuti, *Refraction and Dispersion in Optical Glass,* 12th International Conference on Radiation Effects in Insulators, Gramado, Brazil, 31 August - 5 September 2003.

96. W. Karstens and D. Y. Smith, *Optical Properties of Graphite*, Bull. Am. Phys. Soc. **49**, 67 (2004).

97. E. Shiles and D. Y. Smith, *Refraction and UV Absorption in Optical Glass*, Bull. Am. Phys. Soc. **49**, 305 (2004).

98. C. E. Black, M. Inokuti, W. Karstens, M. S. Malghani, E. Shiles, D. Y. Smith, *Synchrotrons Shed New Light on Optical Glass*, DOE/NSF- EPSCoR Conference 2004, Argonne National Laboratory, Argonne, IL, 14 June 2004.

99. M. Inokuti, W. Karstens, E. Shiles, and D. Y. Smith, *Mean Excitation Energies for Stopping Power Evaluated from Oscillator-Strength Spectra*, Symposium on the Interaction between Particle Beams and Matter, Okayama University of Science, Okaama, Japan, 14-15 October 2004.

100. D. Y. Smith, E. Shiles, and M. Inokuti, *Ultraviolet color centers and refraction in Silicate Glasses,* International Conference on Defects in Insulating Materials, University of the Riga, Latvia, 11-16 July 2004.

101. Mitio Inokuti, , W. Karstens, E. Shiles, and D. Y. Smith, *Mean Excitation Energy for the Stopping Power of Silicon from Oscillator-Strength Spectra*, Bull. Am. Phys. Soc. **50**, 1007 (2005).

102. D. Y. Smith, W. Karstens, and M. S. Malghani, *Optical Constants Determined by Genetic Algorithms*, Bull. Am. Phys. Soc. **50**, 1075 (2005).

103. C. E. Black, W. Karstens, D. Y. Smith, *Refractive-Index Dispersion Formulas*, *Old and New*, Bull. Am. Phys. Soc. **50**, 1413 (2005).

104. E. Shiles, M. Inokuti, W. Karstens, and D. Y. Smith, *Mean Excitation Energy for the* Stopping Power of Silicon from Oscillator-Strength Spectra, DOE/NSF- EPSCoR Conference 2005, National Energy Technology Laboratory, Morgantown, WV, 14-16 June 2005.

105. D. Y. Smith, M. Inokuti, W. Karstens, and E. Shiles, *Mean Excitation Energy for the Stopping Power of Light Elements*, 13th International Conference on Radiation Effects in Insulators, SantaFe, NM, 28 August – 02 September 2005.

106. W. Karstens and D. Y. Smith, *Analysis of Reflectivity Measurement*s, Bull. Am. Soc. **51**, 705 (2006).

107. C. E. Black, E. Shiles, and D. Y. Smith *Contribution of IR Ionic Modes to the Refractive Index of Glasses*, Bull. Am. Soc. **51**, 1290 (2006).

108. D. Y. Smith, C. E. Black, C. C. Homes, and E. Shiles, *Optical Properties of Vitreous TiO2 – SiO2 over a Wide Spectral Range*, 10th Europhysical Conference on Defects in Insulating Materials (EURODIM 2006), University of Milano-Bicocca, Milano, Italy, July 10-14, 2006.

109. D. Y. Smith and W. Karstens, *Moments Formulation of Optical-Pulse Propagation in Insulators*, Bull. Am. Soc. **52,** S32.00013 (2007).

110. W. Karstens and D. Y. Smith, *Newton, Abbe & the Relation Between Refractive Index and Dispersion*, Bull. Am. Phys. Soc. **53** [2], Abstract ID: BAPS.2008.MAR.X36.1.

111. D. Y. Smith and W. Karstens, *The Refractive Index of Glass and Its Dispersion for Visible Light*, International Conference on Defects in Insulating Materials, Federal University of Sergipe, Aracaju, SE, Brazil, 24-29 August 2008.

112. D. Y. Smith and W. Karstens, *Energy Loss by Photons and Charged Particles in Metals to Insulators*, Bull. Am. Phys. Soc. **55** [2], Abstract ID: BAPS. 2010.MAR.J42.10.

113. W. Karstens and D. Y. Smith, *Collective Excitations, Optical Properties and the Stopping Power of Materials*, 17th International Conference on Ion Beam Modification of Materials (IBMM 2010), Montréal, Québec, Canada, August 22 - 27, 2010.

Invited Papers, Seminars, and Colloquia

1. *The Theory of Paramagnetic Impurities in Van der Waals Crystals*, Department of Physics, University of Rochester, Rochester, New York, February 1962.

2. *Calculation of the g-Factor and Hyperfine Interaction of Atomic Impurities Trapped in Solid Rare Gases*, General Electric Research Laboratory, Schenectady, New York, January 3, 1963.

3. *Spin Resonance of Simple Impurity Centers in the Solid Rare Gases*, Department of Physics, University of Illinois, Urbana, Illinois, May 17, 1963.

4. *Calculation of the g-Factor and Hyperfine Interaction of Atomic Impurities Trapped in Solid Rare Gases*, Research Laboratory, United Aircraft Corporation, West Hartford, Connecticut, December 27, 1963.

5. *Spin-Orbit Effects in the F Absorption Band*, U.S. Naval Research Laboratory, Washington, D.C., April 24, 1964.

6. *Spin-Orbit Splitting of the F Center*, Department of Physics, University of Illinois, Urbana, Illinois, May 1964.

7. *Spin-Orbit Effects in the F Center*, Eastman Kodak Research Laboratories, Rochester, New York, June 5, 1964.

8. *Spin-Orbit Effects in the F Absorption Band of the Alkali Halides*, Argonne National Laboratory, Argonne, Illinois, June 26, 1964.

9. *Spin-Orbit Effects in the F Band in Alkali Halides*, Xerox Research and Engineering Center, Webster, New York, August 14, 1964.

10. *Spin-Orbit Effects in Color Centers* (Lecture Series), Physikalisches Institut, Technische Hochschule, Stuttgart, West Germany, May 1966.

11. *Pseudopotentials* (Lecture Series), Physikalisches Institut, Technische Hochschule, Stuttgart, West Germany, February 16-17, 1967.

12. *Pseudopotential Theory of Color Centers*, Physikalisches Institut, Universität Karlsruhe, West Germany, February 1967.

13. *A Survey of Magneto-Optic Experiments on Color Centers*, Department of Physics, University of Illinois, Chicago, Illinois, November 15, 1967.

14. *Faraday Rotation and the Study of Defects in Insulators*, Illinois Institute of Technology, Chicago, Illinois, March 6, 1968.

15. *The f-Sum Rule, Smakula's Equation and the Oscillator Strengths of Color Centers*, 1968 International Symposium on Color Centers, Rome, Italy, September 23, 1968.

16. *Dispersion Relations in a Magnetic Field*, University of Pisa, Italy, September 29, 1968.

17. *Magneto-Optic Effects in Color Centers*, University of Kansas, Lawrence, Kansas, January 10, 1969.

18. *Magnetic Effects in Color Centers in the Alkali Halides*, II. Physikalisches Institut der Universität Stuttgart, West Germany, September 1, 1971.

19. *Magneto-Optical Properties of Color Centers*, Department of Physics, Purdue University, West Lafayette, Indiana, December 17, 1971.

20. *Zeeman Effects in Color Centers*, Michigan State University, East Lansing, Michigan, June 20, 1972.

21. *Dispersion Relations, Sum Rules and the Optical Properties of Matter*, University of Alberta, Edmonton, Canada, November 21, 1972.

22. *Superconvergence and Sum Rules for the Optical Constants*, University of Manitoba, Winnipeg, Manitoba, Canada, November 22, 1972.

23. *Review of Fine-Structure Features of Color Centers*, Western Canada Solid State Symposium, University of Manitoba, Winnipeg, Manitoba, Canada, November 24-25, 1972.

24. *Newton's Laws, Dispersion Relations and Optics*, Physics Colloquium, Northern Illinois University, DeKalb, Illinois, February 16, 1973.

25. *Superconvergence Relations, Sum Rules, and their Application to Defect Spectra*, Department of Physics, Kyoto University, Japan, August 31, 1974.

26. *Some New Light on Optics: Dispersion Relations, Sum Rules, and the Superconvergence Theorem*, Physics Colloquium, Illinois Institute of Technology, Chicago, Illinois, January 22, 1975.

27. *New Light on Optics: Dispersion Relations, Sum Rules and the Superconvergence Theorem, Physics Colloquium*, University of Illinois, Chicago, Illinois, February 26, 1975.

28. *Solar Energy: Photothermal Conversion and Optically Selective Surfaces*, Argonne National Laboratory, Argonne, Illinois, August 25, 1975.

29. *Optical Sum Rules*, Physics Colloquium, University of Antwerp, Belgium, November 18, 1975.

30. *Optical Sum Rules and the Moments Analysis of Spectra*, University Colloquium, Universität Stuttgart, West Germany, December 2, 1975.

31. *Dispersion Relations and Spectral Analysis in Magneto-optics*, II. Physikalisches Institut der Universität Stuttgart, West Germany, December 8, 1975.

32. *Dispersion Relations and Superconvergence Relations in Optics*, Max-Planck Institut für Festkörperphysik, Stuttgart, West Germany, December 12, 1975.

33. *Optical Sum Rules--The Laws of Mechanics in Space*, Rensselaer Polytechnic Institute, Troy, New York, April 21, 1976.

34. *Optical Sum Rules--The Laws of Mechanics in Space*, Iowa State University, Ames, Iowa, October 28, 1976.

35. *Optical Sum Rules--The Laws of Mechanics in Space*, Oklahoma State University, Stillwater, Oklahoma, November 18, 1976.

36. *Optical Sum Rules and the Self-Consistent Analysis of Spectra*, Exxon Research Laboratories, Linden, New Jersey, May 5, 1977.

37. *Finite-Energy Sum Rules for Infra-red Reflection Spectroscopy: Application to Ionic Crystals and Solar Heat Mirrors*, 1977 International Conference on Defects in Insulating Crystals, Gatlinburg, Tennessee, October 10, 1977.

38. *Optical Properties of Solar Materials*, Solar-Related Materials Research Review, Ames Laboratory, Ames, Iowa, November 29, 1977.

39. *Dispersion Relations and Moments Analysis of Optical Spectra*, Colloquium, Institute of Optics, University of Rochester, New York, March 31, 1978.

40. *Theory of Optical Properties of Solar Materials: Sum Rule Constraints*, Symposium on Solid State Science, Materials Problems Associated with Solar Energy, Arizona State University, Tempe, Arizona, April 14, 1978.

41. *Sum Rule Constraints on Optical Properties and Solar-Thermal Processes*, Colloquium, Optical Sciences Center, University of Arizona, Tucson, Arizona, October 19, 1978.

42. *The Optical Analog of Newton's Laws of Motion*, Physics Colloquium, Purdue University, West Lafayette, Indiana, March 29, 1979.

43. *Dispersion Theory and Moments Relations in Magneto-Optics* (Lecture Series), NATO Summer Institute, University of Antwerp, Antwerp, Belgium, July 1979.

44. *Optical Sum Rules--The Optical Analog of Newton's Laws*, Physics Colloquium, Michigan State University, East Lansing, Michigan, April 23, 1979.

45. *Dispersion Theory and the Analysis of Optical Spectra*, University of Antwerp (UIA), Antwerp, Belgium, October 23, 1979.

46. *Dispersion Relations and Sum Rules for Matter in an Electromagnetic Field*, Technische Hochschule Aachen, Aachen, West Germany, November 22, 1979.

47. *Sum Rules for Reflection Spectroscopy and the Efficiency of Solar Collectors*, Philips Research Laboratory, Aachen, West Germany, November 23, 1979.

48. *General Applications of Sum Rules in Optical Spectroscopy*, Gesamthochschule, Paderborn, West Germany, November 27, 1979.

49. *Sum Rules, Smakula's Equation, and Solar Energy*, Universität Stuttgart, Stuttgart, West Germany, February 4, 1980.

50. *Superconvergence Relations and the Analysis of Optical Data*, Conference on Basic Optical Properties of Materials, National Bureau of Standards, Gaithersburg, Maryland, May 5-7, 1980.

51. *The Laws of Mechanics in Wavelength Space*, Johannes-Kepler Universität, Linz, Austria, May 29, 1980.

52. *Sum Rule Analysis of Optical Properties: Applications to Metals and Semiconductors*, Universität Stuttgart, Stuttgart, West Germany, June 12, 1980.

53. *The Jonschner-Njai Treatment of Low-Frequency Fluctuations and Dissipation*, Max-Planck-Institut für Festkörperforschung, Stuttgart, West Germany, July 3, 1980.

54. *Applications of Sum Rule Analysis to Optical Spectra*, Max-Planck-Institut für Festkörperforschung, Stuttgart, West Germany, July 18, 1980.

55. *Optical Sum Rules: Theory and Applications to the Analysis of Spectra*, Physics Colloquium, Universität Dusseldorf, June 1, 1981.

56. *Ligand Effects in the Spin-Orbit Structure of Impurity-Vacancy Complexes in Ionic Solids*, Physics Seminar, Universität Stuttgart, June 5, 1981.

57. *Spin-Orbit Effects in Point Defects and Defect Complexes in Ionic Solids*, Solid State Seminar, University of Wisconsin, June 26, 1981.

58. *Sum Rule in Optics--Newton's Laws of Motion in the Spectrum*, Physics Colloquium, Memorial University, St. John's, Newfoundland, April 5, 1982.

59. *Dispersion Methods in Optics - The Optical Analogues of Newton's Laws*, Physics Colloquium, University of South Florida, April 23, 1982.

60. *Optical Dispersion Methods - Newton's Laws Revisited*, Indiana University - Purdue University at Indianapolis, May 27, 1982.

61. M. Inokuti and D. Y. Smith, *Dispersion-Relation Analysis of the Dielectric Response Function of Metallic Aluminum & Its Connection to the Stopping Power for Charged Particles*,

Workshop on the Interaction of Atoms, Ions, and Molecules with Solids - Argonne National Laboratory, February 23, 1983.

62. *Optical Sum Rules & Kramers-Kronig Relations: Newton's Laws in Disguise*, Physics Colloquium, North Dakota State University, Fargo, North Dakota, March 18, 1983.

63. *Superconvergence Relations: Mechanical Constraints on Optical Properties*, Physics Colloquium, New Jersey Institute of Technology, Newark, New Jersey, May 13, 1983.

64. *Computer Simulation of Amorphous Materials and Liquids by Molecular Dynamics*, DOE Workshop on Theory and Computer Simulation of Materials Structures and Imperfections, Houghton, Michigan, August 6-10, 1984.

65.*A Semi-Empirical Spin-Orbit Splitting Formula for Electrons Trapped at Vacancies*, International Conference on Defects in Insulating Crystals, Salt Lake City, Utah, August 20-24, 1984.

66. *Dynamical Constraints on the Optical Properties of Matter*, Physics Colloquium, University of Vermont, Burlington, Vermont, January 30, 1985.

67. *Sum Rule Constraints on X-ray Data*, New Directions in X-ray Scattering Workshop, Asilomar, Pacific Grove, California, April 2-5, 1985.

68.*Optical Properties of Matter from the Far Infrared to Hard X-rays: What One Can Learn from Causality, Inertia, and a Few Experiments*, Physics Colloquium, Memphis State University, Memphis, Tennessee, February 20, 1986.

69. *Inside-Out Atoms and Upside-Down Energy Levels*, Physics Colloquium, University of Vermont, Burlington, Vermont, November 12, 1986.

70. *Newton's Laws and the Optical Response of Matter: Sum Rules Tell You Almost All*, Physics Colloquium, Lehigh University, Bethlehem, Pennsylvania, February 5, 1987.

71. *Intraband and Interband Processes in the Optical Properties of Metals*, Optical Physics Seminar, Lehigh University, Bethlehem, Pennsylvania, February 5, 1987.

72. *Photon Scattering and Photon Attenuation*, Workshop on New Directions in Soft X-ray Near Threshold Phenomena, Asilomar, Pacific Grove, California, March 1-4, 1987.

73. *Spin-Orbit Effects in Point Defects: Inside-Out Atoms and Upside-Down-Energy Levels*, Solid State Physics Seminar, University of Connecticut, October 14, 1988.

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79. *Optical Determination of the Spatial Extent of Defects in Insulators,* Seminar, Universität Stuttgart, July 23, 1998.

80. *Dispersion Theory and Sum Rules: Newton's Laws in Frequency Space*, Theoretical Physics Seminar, Physics Division, Argonne National Laboratory, October 27, 1999.

81. *Dr. Vinti's Sum Rules, or: What Absorption Spectra Tell Us About the Size of Defects, Atoms and Molecules*, Atomic-Physics Group Seminar, Chemistry Division, Argonne National Laboratory, December 16, 1999.

82. *Detection of Defects in Semiconductors via Their Refractive-Index Signature.* Seminar, Universität Stuttgart, September 14, 2001.

83. *Optical Properties of Glass in a New Light*, The Royal Institution of Great Britain, Conference on Atomic Transport in Complex Materials, London, 27-28 June 2002 (by invitation).

84. *Transparent Materials in a New Light*, Physics Department Colloquium, Lehigh University, November 14, 2002.

85. *Ultraviolet Spectroscopy of Disordered Systems: Optical Glass*, Physics Department Colloquium, University of Vermont, April 14, 2004.

86. *Mean Excitation Energies for Stopping Power Evaluated from Oscillator-Strength Spectra*, Symposium on the Interaction between Particle Beams and Matter, Okayama University of Science, Okaama, Japan, 14-15 October 2004. (Delivered by Mitio Inokuti)

87. *Optical and Electronic Properties of Silicon and Silicate Glasses*, Segall Symposium, Department of Physics, Case-Western Reserve University, October 1, 2005. (by invitation).

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6. D. Y. Smith, Editor, *Solid State Science Division Newsletter*, June 1978 - April 1979.

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8. A. R. P. Rau, D. Y. Smith and L. Young, *Obituary, Mitio Inokuti [06 July 1933- 04 June 2009]*, Physics Today, August 2010 Web Issue.