STEPHEN T. KOWEL

CURRICULUM VITAE

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Personal and Professional Data

Current Position: Professor of Electrical Engineering
Department of Electrical and Computer Engineering
University of Cincinnati
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Education and Degrees

09/65 - 12/68 University of Pennsylvania, PhD ['68]
Ford Foundation Fellow in Electrical Engineering ['65-'67]
Ford Foundation Forgivable Loan Recipient for Dissertation Research ['68]

09/64 - 08/65 Polytechnic University, MSEE ['66]
NSF Traineeship in Electrical Engineering

09/60 - 05/64 University of Pennsylvania, BSEE ['64].

Scientific and Professional Society Activities and Honors

• Fellow	Optical Society of America (OSA) ['92]
• Fellow	Institute of Electrical and Electronics Engineers (IEEE) ['97]
• Centennial Medal	IEEE ['84]
• Reviewer	NSF, OSA journals, IEEE journals, *Nature*
• Chair	Gordon Research Conference on Organic Thin Films, Ventura, CA ['92]
• Vice Chair	Gordon Research Conference on Organic Thin Films, Ventura, CA ['90]
• Conference Chair	SPIE, Very Large Optical Memories, San Diego, July ['92, '93, '94]
Member	NRC Review Panel for Ford Foundation Minority Predoctoral Fellowships ['96, '97, '98]
Member	OSA Public Policy Committee ['98 - '01]
Member	OSA Congressional Fellow Selection Committee ['98-'01]
Member	Editorial Advisory Board, *Nonlinear Optics*, Gordon and Breach Science Publishers ['91-present]
Member	1994 David Richardson Medal Committee (OSA)
Member	Program Committee, IEEE/LEOS Topical Meeting on Smart Pixels ['92]
Session Chair	Gordon Research Conference on Organic Thin Films ['90, '88]
Participant	1981 Professors' Conference on The Impact of Microelectronics; General Electric Company, Schenectady, NY
Member Information	Technical Program Committee, NASA Conference on Optical Processing for Aerospace Applications ['81]
Member	IEEE FATE Subcommittee of Educational Activities Board ['75]
Leader	IEEE Ethical Conduct Activities Task Force of USAB ['77 - '78]
Member	IEEE Ethics Review Final Panel ['79 - '84]
Chair	Session on Physics of New Devices, 1980 IEEE International Symposium on Circuits and Systems
Chair	IEEE Syracuse Section ['75 - '76]
Member	IEEE Syracuse Section Executive Committee ['71 - '81].

Professional Assignments

University of Cincinnati:

- Professor of Electrical Engineering [9/04 -]
- Dean of Engineering, and Geier Professor of Engineering Education [5/99 - 8/04]

The University of Alabama in Huntsville:

- Director, Laboratory for Integrated Computing and Optoelectronic Systems [6/98 - 4/99]
- Professor, Electrical and Computer Engineering (ECE) ['90 - '99]
- Interim Dean, College of Engineering [7/97 - 5/98]

- Chair, Department of Electrical and Computer Engineering ['90 - '97]
- Director (Founding), Doctoral Program in Optical Science and Engineering ['92 - '97]
- Professor, Doctoral Program in Optical Science and Engineering ['92 - '99]

Professor, Alabama Inter-Campus Doctoral Program in Materials Science ['90 - '99]

Member of the Engineering Staff, Center for Applied Optics ['95 - '99].

University of California, Davis:

- Professor, Department of Electrical Engineering and Computer Science (EECS) ['84 - '90]
- Vice Chair, Department of Electrical Engineering and Computer Science ['86 - '90]
- Director, Organized Research Program on Polymeric Ultrathin Film Systems ['88 - '90]
- Faculty Assistant to the Chancellor ['88 - '89].

Syracuse University:

- Professor, Department of Electrical and Computer Engineering ['79 - '84]
- Associate Professor, Department of Electrical and Computer Engineering ['74 - '79]
- Assistant Professor, Department of Electrical and Computer Engineering ['69 - '74]
- NSF Summer Research Participant – research on parametric amplification ['63].

Cornell University:

- Visiting Professor, National Nanofabrication Facility, and School of Electrical Engineering – research on microelectronic materials, fabrication, and devices ['82 - '83].

University of Pennsylvania:

- Associate in Electrical Engineering, Moore School of Electrical Engineering – dissertation and postdoctoral research, undergraduate teaching ['68 - '69]
- Teaching/Research Fellow, Moore School of Electrical Engineering – research on avionics antenna project, undergraduate teaching ['67-'68]
- Supervisor, Physics Department Computer Center [Summer '64]
- NSF Summer Research Participant – research on numerical analysis ['62].

General Electric Company:

- Engineer, Aerospace Physics Laboratory, Re-Entry Systems Department – research on neutron bombardment effects on semiconductors [Summer '66].

Instruction

Graduate courses: Fourier Optics; Liquid Crystals; Electromagnetic Theory; Complex Variables and Transforms; Quantum Mechanics; Quantum Electronics; Optical Processing; Optical Computing; Physical Principles in Electrical Engineering; Lasers and Masers; Survey of Modern Devices [CCD, SAW, liquid crystals, Josephson junctions, etc.]; Solid State Physics; Linear Vector Spaces; Acoustical Microelectronics; Theory of Semiconductor Properties; Integrated Circuits: Materials, Fabrication and Devices.

Undergraduate courses: Microelectronics, Introduction to Electric Circuits; Signals and Systems; Network Theory; Electromagnetic Theory; Electronic Materials; Electron Devices, Solid State Electronics, Fundamental Principles of Device Physics; Introduction to Electrical and Computer Engineering.

At Syracuse University, a major component of instruction involved off-campus credit courses for graduate students employed at corporate and government laboratories. At UAH, academic programs were geared to part-time students working in the Huntsville high-technology community.

Leadership and Service

University of Cincinnati:

- Member, Presidential Search Committee ['09] (elected by Faculty Senate)
- Chair, ECE Department Reappointment, Promotion, and Tenure Committee ['08 -]
- Chair, ECE Department Ad Hoc Committee on Graduate Program Revision ['09]
- Member, College of Engineering Curriculum Committee ['06 -]
- Member, University Grievance Committee ['06 - '09] – the only committee mandated under the AAUP/UC contract; Chair ['07], – chaired RPT and dismissal grievance panels
- Member, Faculty Senate Research and Scholarship Committee ['06 - '09]
- Member, Faculty Senate ['07 -]
- Dean of Engineering – broad leadership responsibility for college of 150 faculty, 1950 undergraduate students, 1100 full-time graduate students, with total expenditures of $40M (research $ 21M), within a "Research I" university
- Member, Council of Deans ['99 - '04] – Budget Committee ['00 - '03], Research and Graduate Studies Committee ['00 - '04]

Co-Chair, Task Group on Resource Enhancements and Performance-Based Budgeting, University Academic Master Plan, "UC21"

Member, Honorary Degree Selection Committee ['99 - '02]

Chair, Search Committee for Dean of the College of Design, Architecture, Art, and Planning ['99 - '00].

The University of Alabama in Huntsville:

- Director, Laboratory for Integrated Computing and Optoelectronic Systems – founding director (reporting to vice president for research) of new research center to exploit NSF EPSCoR Infrastructure Award [6/98 - 4/99]. In 2004, this center earned UA System recognition and budget support as the Nano and Micro Devices Center.
- Research Council – advised vice president for research on policy and procedures [6/98 - 4/99]
- Interim Dean, College of Engineering – developed strategic plan, initiated fundraising campaign, planned and executed move of three departments to new space, developed

renovation plan for existing building, prepared for and presided over successful ABET review of seven programs [7/97 - 5/98]

- College of Engineering Executive Committee ['90 - '98]
- Optics PhD Planning Committee ['90 - '91]
- Provost's Task Force on Student Satisfaction and Success ['96 - '97]
- Chair, ECE Department – provided leadership for all functions of the department, with 650 undergraduate students, 250 graduate students, growing from 16 to 27 faculty members ['90 - '97]
- Program Director, Doctoral Program in Optical Science and Engineering – founding director of interdisciplinary program; obtained funding, supervised development of courses and examinations, and led recruitment of students ['92 - '97]
- President's Committee on Priorities and Resources – advised the president on important campus issues, budget priorities ['93 - '94, '97 - '99]
- Administrative Council – advised the president on administrative matters ['97 - '98]
- Academic Council – advised the provost on academic policy matters ['94 - '98]
- Council of Deans – advised the provost on academic operations ['97 - '98]

University Publications Board ['97 - '98], Search Committee for Dean of the College of Science ['91], Search Committee for the Director, Center for Applied Optics ['90 - '93], Program Committee for the Doctoral Program in Optical Science and Engineering ['92 - '99], Search Committee for Chair of the Computer Science Department ['94 - '95], Search Committee for Chair of the Chemical and Materials Engineering Department ['96 - '97], Engineering Dean Evaluation Committee ['96 - '97].

University of California, Davis:

- Vice Chair, EECS Department (~53 faculty) – acted for the Chair in his absence, consulted on all personnel matters, space assignments, major budgetary issues, teaching assignments; appointed and assigned Teaching Assistants and Readers ['86 - '90]
- Faculty Assistant to the Chancellor – developed and coordinated faculty work groups studying the campus research environment (workload, incentives, resources, and appointments); preparation of comprehensive plan for the chancellor on research development for the campus ['88 - '89]
- Alternate Chair, Engineering Unit #2 Building Committee – faculty, staff, planners and architects designed 100,000 ASF facility, including extensive clean room fabrication laboratory ['88 - '90]
- Director, Organized Research Program on Polymeric Ultrathin Film Systems – leadership of a Campus-authorized multidisciplinary research group of seven faculty members and more than ten graduate students; coordination with collaborators at the Naval Weapons Center ['88 - '90]

Recruitment Advisory Committee for the Position of Vice Chancellor - Research ['88 - '89]; Search Committee for the Associate Dean for Research, College of Engineering ['88]

Coordinator, Workshop on Physics of Electronic Devices, INTEL Corporation, Folsom, CA – organized and participated in program of twenty two-hour lectures by EECS faculty [Summer, '88].

Senate Representative Assembly ['85 - '87], EECS Integrated Circuit Laboratory Planning Committee ['84 - '85], EECS Planning Committee ['86 - '89; Chair, '86 - '87], EECS Committee on Graduate Studies and Research ['87 - '89, Chair], EECS Executive Committee ['86 - '90].

Syracuse University:

- University Senate ['77 - '82]; Senate Committee on Academic Freedom, Tenure and Professional Ethics – Committee was responsible for all procedural complaints by faculty and all ethical complaints against faculty ['77 - '81; Chair, '79 - '81].
- Senate Committee on Budget and Fiscal Affairs ['81 - '82].

Research:

My research interests have been focused in the areas of novel materials and devices within the broad framework of optoelectronics. This includes acousto-optical image processors, electro-optic polymer etalon modulators, liquid crystal adaptive lenses, and real-time, autostereoscopic 3-D displays based on diffractive and MEMS technology. Support has come from NSF, NASA, US Army, US Air Force, DARPA.

Publications:

More than 100 papers, including 50 fully refereed publications, have appeared in print. Twelve United States Patents have issued. Eight of these patents have been licensed.

Supervision of Research, Dissertations and Theses:

I have supervised ten post-doctoral Research Engineers since '72:

O. Lewis, A. Mahapatra, E. Balizer, A. Nouhi, K. W. Loh, M. A. Fathimulla, R. Selfridge, C. Eldering, M. Mortazavi, and J. Yan.

Dissertations [PhD]:

Daniel J. Fleming, "A Device for Obtaining Direct Electronic Fourier Transforms of Images" ['72]

Anil Gupta, "An Elastobirefringent Light Valve for Reconstructing an Image from its Fourier Transform" ['75]

Dennis Cleverly, "An Electro-optically Focused Lens" ['82]

William A. Penn, "An Acousto-Optic Adaptive Signal Cancellor" ['84]

L. Michael Hayden, "Structural Studies of Langmuir/Blodgett Films by Second Harmonic Generation" ['87]

Mohammad Ali Mortazavi, "Nonlinear Optical Properties of Poled Polymer Films" ['89]

Charles A. Eldering, "Electro-optic Polymeric Thin Films and Devices" ['89]

Patrick Brinkley, "Refraction and Diffraction in Liquid Crystal Lenses" ['92]

Shuping Wang, "Etalons for Optical Interconnects" ['96]

Wing Chan, "Imaging by Liquid Crystal Adaptive Lenses" ['96]

Yi Sun, "Circular Electrode Liquid Crystal Adaptive Lenses" ['02]

Jun Yan, "Microelectromechanical Arrays for 3-D Displays" ['01].

Theses [MS]:

R. W. Wynaendts, "Photon Correlation Spectroscopy Using a Mini Computer" ['73]

Moosa Mehter, "Fabrication and Evaluation of a Two-Dimensional Surface Acoustic Wave System" ['78]

Ebrahim Mehter, "Ion Beam Sputter Deposition of Piezoelectric Zinc Oxide" ['81]

Robert Kilmer, "Piezoelectric Thin Films of ZnO by Argon Ion Beam Sputtering" ['83]

Charles A. Eldering, "Evaluation of the Use of p-n Structures as Photodetectors in Silicon Integrated Circuits" ['86]

Earl W. Brabandt, "Microcomputer-Based Controller for a Liquid Crystal Lens" ['87]

Patrick Brinkley, "Performance Characteristics of a High Resolution Liquid Crystal Lens" ['88]

Marc Landgraf, "Design and Test of a Prototype Topographic Optical Interconnect" ['90]

Lindee Ning, "Aberration Correction for the Liquid Crystal Adaptive Lens" ['92].

Grants and Contracts [Principal, or Co-Principal, Investigator]:

"Direct Electronic Fourier Transform Devices," USAF Rome Laboratory, '72 - '74, $96,000

"Direct Electronic Fourier Transform Sensors," NSF, '75 - '76, $30,000

"Direct Electronic Fourier Transform Sensors," US Army Night Vision and Electro-Optics Laboratory, '76 - '78, $326,000

"DEFT Sensor Fabrication," Deft Laboratories, Inc., '77 - '79, $18,000

"DEFT Sensor Fabrication," US Army Engineer Topographic Laboratory, '77 -' 79, $10,000

"Evaporation Controller Donation," Inficon, Inc., '77, $4,000

"Polymeric Microelectronic Technology," US Army Night Vision and Electro-Optics Laboratory, '80-'82, $274,000

"Polymeric Display Devices," NSF, '79 - '82, $126,000

"Integrated Optical Devices," General Electric Company, '80 - '84, $95,000

"Advanced Programmable Image Sensor/Processor," NASA Langley Research Center, '79 - '81, $107,000

"Surface Acoustic Wave/Silicon Monolithic Programmable Sensor/Processor," NASA Langley Research Center, '79 - '83, $306,000

"Liquid Crystal Adaptive Lens," NSF, '82 - '86, $220,000

"Organic and Polymer Crystalline Films for Spatial Light Modulation," Air Force Weapons Laboratory, '84 - '86, $265,000

"Microwave Signal Detection Using Modulation of Polymeric Optical Waveguides," Lawrence Livermore National Laboratory, '85 - '88, $125,000

"Polymeric Materials for Electro-optic Testing," RADC, '86, $47,000

"In-Situ Optical Monitoring of Langmuir/Blodgett Deposition," NSF, '87 - '88, $22,000

"In-Situ Capacitance Sensor for Langmuir/Blodgett Deposition," NSF, '87 - '88, $23,000

"Optical Shared Memory," USAF Rome Laboratory, '88, $87,000

"Langmuir / Blodgett Deposition Apparatus," NSF, '88, $70,000 [includes $25,000 cost sharing]

"Liquid Crystal Lenses for Three-Dimensional Memories," Call/Recall, Inc./ UC MICRO, '88 - '89, $81,000 [no indirect cost]

"Nonlinear Optical Polymeric Films," Naval Weapons Center, '89 - '90, $16,000

"Optical Shared Memory Demonstration," USAF Rome Laboratory, '89, $68,000

"Organic Films for the Three-Dimensional Two-Photon Memory," Call/Recall, Inc./USAF Rome Laboratory/ARPA, '89 - '93, $290,000

"Polymeric Thin Films for Opto-electronics," IBM Almaden Research Center, unrestricted gift to UCD, '90 - '91, $25,000

"Gordon Conference on Organic Thin Films," NSF, '91, $10,000

"Polymeric Ultrathin Film Multilayered Modulators," NSF/ARPA, '90 - '93, $300,000

"Holographic Television," US Army Missile Command/ARPA, '91 - '95, $1,210,000

"Practice-Oriented Master's in Optics," ARPA, '94 - '97, $600,000, including UAH and corporate cost-sharing

"Alabama Consortium for Optics Technology," NSF EPSCoR, '95 - '98, $500,000 (UAH component $150,000 with additional $150,000 in cost sharing)

"Traineeships for PhD Students in Optical Science and Engineering," NSF, '95 - '00, $562,700 (supplemented with UAH cost sharing of $350,000)

"Integrated Research Environment for Mixed-Mode Intermeshed Opto-electronics," NSF EPSCoR, '98 - '01, $3,800,000 (including $1.8 M of cost sharing by UAH and corporate partners).

Consulting / Corporate Activities:

- ReviewReady, Inc., Cincinnati, OH; principal and co-founder ['06 -]. Advanced technical editing services

New Focus, Inc., San Jose, CA; consultant on liquid crystal optics for telecommunications ['01]

Technology, Patents & Licensing, Inc., Pipersville, PA; Member of Advisory Committee, consultant ['98 - '03]. Corporation develops technology transfer portfolios for corporations.

- TechSolve, Cincinnati, OH; Member of Board of Directors ['99 - '04]. TechSolve is a nonprofit corporation working to enhance the competitiveness of manufacturing and technology businesses.

- Edison Materials Technology Center (EMTEC), Dayton, OH; Member, Board of Governors ['99 - 04]
- Call/Recall, Inc., San Diego, CA; co-founder; consultant ['87 - '88]; Officer and Board Member ['88 - '94]. The corporation, licensee of U. S. Patent on the Adaptive Liquid Crystal Lens, continues development of two-photon, three-dimensional optical memory technology.
- Deft Laboratories, Inc., East Syracuse, NY; Chairman of the Board and Vice-President ['78 - '84]. Incorporated in '76 to develop and manufacture sensors and electronic image processing instruments based on DEFT technology; licensee of U. S. Patents on Direct Electronic Fourier Transforms Of Optical Images. In '80 the Company introduced an additional product line, an emergency locator transmitter [ELT] for use in general aviation. Corporation closed, '84.

General Electric Company, Syracuse, NY; occasional consultant on acousto-optics ['76 - '84].

Research Corporation, New York, NY; technical evaluation of inventions ['74 - '80].