Stephen F. Pond

MEMS and Inkjet Technology Consultant
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Expertise: MEMS devices and non-impact printing processes, especially ink jet. Ph.D. solid state physicist. Registered U.S. Patent Agent (# 41,257).

Education:

1967 A. B. Physics Dartmouth College, Hanover, NH
1968 M.S. Physics University of Illinois, Urbana, IL
1971 Ph.D. Physics University of Illinois, Urbana, IL
Thesis: "Electroreflectance of Gallium Arsenide"
1997 Patent Practitioner Internship, Oliff & Berridge, Attorneys-at-Law, Alexandria, VA
Agent, Registration No. 41257, U.S. Patent and Trademark Office.

Experience: Inkjet, MEMS, and Electronic Printing Consultant, Patent Agent, Corporate Research, Product Engineering, and Manufacturing, University Research.

6/98-Present **Electronic Printing and MEMS Consultant and Patent Agent.**
Consultant to outside investors and corporate management for the evaluation of patents and patent applications for MEMS devices and microstructures, inkjet printing. Consultant to clients engaged in inkjet technology development efforts of all types.
Complete patent application preparation for filing by in-house counsel.

Xerox Corporation, June, 1972 to June, 1998.

9/94 - 6/98 **Principal, Ink Jet Business Unit, Xerox Channels Group**.
Responsible for workgroup and special product concept development. Managed the initial productization project for Xerox 600 spi thermal ink jet (TIJ) printhead and ink technology, managed the development of a state-of-the-art thermal ink jet printer mechanism for application to workgroup and networked color printers, and managed the Xerox activities in a joint project with an external partner to prove the feasibility of a high speed printer mechanism for postal franking applications. Became a registered patent agent, PTO # 41257 in August, 1997.

3/89 - 9/94 **Chief Engineer, Components Development and Manufacturing, New Imaging Systems, Supplies Development and Manufacturing Unit**.
Responsible for thermal ink jet (TIJ) advanced technology, product development, and printhead and ink manufacturing activities. Line management responsibility for ~ 60 engineers and technologists. Set program goals and matrix managed tasks across other Xerox functional organizations. Managed ink jet product development collaborations with foreign OEM suppliers and Xerox Japanese subsidiary, Fuji-Xerox.

5/84 - 3/89 **Manager, Electronic Marking Laboratory, Webster Research Center**.
Responsible for thermal ink jet research and technology feasibility demonstration (~ 25 - 55 scientists and technologists). Established microelectronic fabrication and MOS device electronics integration capabilities for TIJ, thin film materials development, and ink development. Enabled three Xerox product initiations. Also responsible for the Xerox Large Area Electronics Facility which developed prototypes for liquid crystal writebars, displays, laser modulators, and writeheads for ionography and direct electrostatic printing.

6/81 - 5/84 **Manager, Electronic Marking Device Area, Electronic Marking Laboratory, Webster Research Center**.
Responsible for thermal transfer, thermal ink jet, magnetographic, and ionographic device fabrication research and feasibility demonstration (~ 20 scientists and technologists). Initiated Xerox thermal ink jet device effort in 1981. A founding manager of the Xerox Large Area Electronics Facility, a microelectronic laboratory devoted to electronic marking and display device research. Managed the Facility shared resources for mask design,

microelectronic packaging, and computing.

12/79 - 6/81 **Manager, Mechanical Design and Integration, Advanced Marking Development Section, Process Engineering Department, Reprographic Technology Group.**
Responsible for the mechanical engineering, printhead design and build, nozzle fabrication, ink supply subsystem, controlled velocity cut sheet paper transport, dryer, and overall mechanical system integration for a 90 page per minute, 300 dot per inch, continuous drop ink jet marking engine (~ 30 engineers and scientists). Also responsible for technical strategy planning for the Advanced Marking Development Section.

3/77 - 12/79 **Sr. Scientist /Area Manager, Advanced Marking Program, Corporate Research**.
Charter technical contributor Xerox continuous ink jet research program begun in March, 1977. Responsible for early continuous ink jet demonstration, technical strategy, and competitive technology information analysis. Technical liaison with Xerox companion piezoelectric drop-on-demand research effort in Dallas, Texas.

6/73 - 3/77 **Scientist, Imaging Sciences Section, Webster Research Center**.
Project leader and principal technical contributor for a successful research and feasibility demonstration of a 135 page/minute, 750 dot/inch, magnetographic electronic duplicator. Made seminal contributions to the physical process understanding, magnetic field and thermal latent image creation subsystems, magnetographic toner development, magnetographic image science, and the development of MICR for xerographic systems.

6/72 - 6/73 **Associate Scientist, Xerographic Sciences Section, Research Laboratory Department.**
Conducted fundamental experimental studies of toner adhesion to enable improvement of xerographic cleaning and development processes.

University of Illinois, Champaign-Urbana, Materials Research Laboratory.
9/68 - 6/72 **Teaching and Research Assistant, Post-Doctoral Fellow (1972)**.
Taught a variety of physics courses, conducted semiconductor materials research.

Honors: Phi Beta Kappa (Dartmouth, 1966), Most Promising Chemistry-Physics Graduate (Dartmouth, 1967), University of Illinois Fellow (1967-68), 5.0/5.0 GPA (University of Illinois, 1967-1971), Xerox Research Excellence in Technology Award (1980, 1989), 1991 Xerox President's Award (Xerox highest individual honor).

Patents:
US 4, 030, 104 Thermo-Magnetic Image Transfer Apparatus
US 4, 032, 923 Thermo-Magnetic Imaging Apparatus
US 4, 035, 810 Magnetic Interpositive Method with Electrostatic Imaging
CA 1, 101, 046 Excessive Magnetic Developer Removal System
US 4, 067, 018 Excessive Magnetic Developer Displacement System
US 4, 115, 786 Constant Wavelength Magnetic Recording
US 4, 274, 100 Electrostatic Scanning Ink Jet System
US 4, 531, 137 Thermoremanent Magnetic Imaging Method
US 4, 789, 425 Thermal Ink Jet Printhead and Fabricating Process
US 4, 860, 030 Resistive Printhead Arrays for Thermal Transfer Printing
US 4, 887, 098 Thermal Ink Jet Printer Having Printhead Transducers and Multilevel Interconnections
US 5, 043, 740 Use of Sequential Firing to Compensate for Drop Misplacement Due to Curved Platen
US 5, 057, 854 Modular Partial Bars and Full Width Array Printheads Fabricated from Modular Partial Bars
US 5, 072, 235 Method and Apparatus for Detecting Air Inside a Thermal Ink Jet Printhead
US 5, 218, 381 Hydrophobic Coating for a Front Face Coating to Ink Jet Printheads or Printhead Dies
US 5, 230, 926 Application of a Front Face Coating to Ink Jet Printheads or Printhead

Dies
US 5, 336, 319 Apparatus for Applying an Adhesive Layer to a Substrate Surface
US 5, 367, 326 Ink Jet Printer with Selective Nozzle Priming and Cleaning
US 5, 382, 963 Ink Jet Printer for Magnetic Ink Character Recognition Printing
US 5, 696, 546 Ink Supply Cartridge with Ink Jet Printhead Having Improved Fluid Seal Therebetween
US 5, 843, 259 Method for Applying an Adhesive Layer to a Substrate Surface
US 5, 870, 112 Dot Scheduling for Liquid Ink Printers
US 6, 234, 608 Magnetically Actuated Ink Jet Printing Device
US 6, 344, 819 Heliographic Ink Jet Apparatus and Imaging Processes Thereof
US 6, 441, 774 Heliographic Ink Jet Apparatus and Imaging Processes Thereof
US 6, 505, 902 Mail Piece Producing Machine Having a Wide Swath Envelope Printing Module
US 6, 817, 702 Tapered Multi-layer Thermal Actuator and Method of Operating Same
US 6, 820, 964 Tapered Thermal Actuator
US 6, 824, 249 Tapered Thermal Actuator

Publications: "Electroreflectance of GaAs. I" Physical Review B6, 2248 (1972).
"Electroreflectance of GaAs. II" Physical Review B8 (1973).
"Electroreflectance from Flatband", Surface Science 37 (1973).
"Model of Magnetographic Printing", 1976 London InterMag Conf. Proc., p. 38 -1.
"Toner Mixture to Reduce Background Transfer Effects", Xerox Disclosure Journal 2, p. 17, (1977).
"Use of Flux Channeling in Magnetic Imaging", Xerox Disclosure Journal 4, p. 245 (1979).
"Elimination of Moire Effects Introduced by Recording an Interpositive in Magnetic Imaging Processes", Xerox Disclosure Journal 5, p. 505 (1980).
"Recording Magnetographic Latent Images", IEEE Conf. Elec. Devices, Rochester, NY (1981).
"Thermal Magnetographic Printing", SID Intl. Symposium Digest XVI 250 (1985).
"Ink Jet Technology Classification", 13th Conf. on Ink Jet Printing, BIS CAP International, (October, 1987).
"Ink Jet Technology Overview", 11th Conf. on Ink Jet Printing, Institute for Graphic Communications, (September, 1989).
"Graded Stitch Pagewidth Array", Xerox Disclosure Journal 14, p. 221 (1989).
"Method of Operation of Ink Jet Printer", Xerox Disclosure Journal 16, p. 233 (1991).
"Microelectronic Thermal Ink Jet", BIS Ink Jet Printing Conference, Hamburg, Germany, March 23-25, 1994.
"New Generation for Thermal Ink Jet", IMI 3rd Annual Ink Jet Printing Workshop, Cambridge, Massachusetts, April 5-6, 1994,
"Drop-on-Demand Ink Jet Transducer Effectiveness", IS&T 10th Intl. Conf. on Non-Impact Printing Technology Proceedings, New Orleans (1994).
"Whither Ink Jet? Current Patent Trends", IS&T/SPIE Symposium, Hard Copy Session Proceedings, San Jose (1995).
"Compensation of Subunit Print Density Variation in a Full Width Thermal Ink Jet Printbar", Xerox Disclosure Journal 20, p. 215 (1995).
"System for Sealing the Shim Stock to the Ink Manifold", Xerox Disclosure Journal 20, p. 427 (1995).
"A Process for Lamination of Nickel Screen to the Bonded Channel Wafer in Printhead Manufacture", Xerox Disclosure Journal 21, p. 113 (1996).
"Inkjet Technology and Product Development Strategies", Torrey Pines Research, May, 2000.