ALLEN E. ARMSTRONG

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1961	Massachusetts Institute of Technology	BSME
1962-64	University of Illinois College of Law	
1965	Massachusetts Institute of Technology	MSME

PROFESSIONAL EXPERIENCE:

2002-Present **Consulting Mechanical Engineer** –I operate a mechanical design consultancy, Armstrong Design Office, offering services from concept generation through detailed mechanical design, prototype construction and development. Clients include Design that Matters, Rutgers University and the Smithsonian Astrophysical Observatory. Tools available for prototypes and pilot production include a CNC Bridgeport mill, lathe and TIG welding.

2000 – 2001 AXSUN Technologies, Billerica MA.
Principal Engineer – Responsible for the mechanical design of special machinery employed in the manufacture of photonic packaged chips used in fiber optic networks.

1993 - 2000 FEI Company, Peabody, MA.
Mechanical Engineer - Responsible for the mechanical design of focused ion beam machines used in the manufacture of semiconductors and disk drive heads. In addition to the overall machine layout of the C3D 300mm machine for use in semiconductor fabs, I designed a gas field ion column with a cryogenic helium source.

1988 - 1993 ELECTROSCAN CORPORATION, Wilmington, MA.
Director of Engineering - I led the team of 8 engineers that designed the "Explorer" model environmental scanning electron microscope (ESEM). As **Chief Mechanical Engineer,** I was responsible for the mechanical design of the E3 model ESEM, of which 80 have been manufactured. I introduced mechanical CAD to the company, trained 3 mechanical designers in its use, and designed the file archiving system.

1986 - 1988 ALLEN E. ARMSTRONG, MECHANICAL ENGINEER, Lexington, MA.
Independent Consultant - Operated a mechanical design and fabrication business providing working drawings and completely machined and assembled prototypes for mechanisms in the instrumentation and production tooling areas. Projects included three 5-axis scanning electron microscope stages, a vacuum elevator for an ion implanter, drill jigs and test fixtures for a medical transducer assembly, and a

Polaroid camera for transmission electron microscopes. Clients included ElectroScan Corp., ASM Ion Implant, E.Fjeld Corp, Hewlett Packard and MIT.

1978-86 EATON CORPORATION, Beverly MA.
Chief Mechanical Engineer - Supervised a group of 10 engineers and technicians responsible for the complete mechanical design of the NV-10, a successful ion implanter and the AT-4 automatic wafer handling system.

1977-78 ARTHUR D. LITTLE, INC, Cambridge, MA.
Consulting Mechanical Engineer - Major design projects included a compressor based on the involute scroll principle and a Stirling-cycle reciprocating helium refrigerator supported on gas bearings for use in an infra-red observation satellite.

1976-77 GCA CORPORATION, Bedford, MA
Mechanical Engineer - Designed instrument for sampling atmospheric particulates.

1975-77 POSITECH CORPORATION, Lexington, MA
Vice President, Engineering - One of two principals in a startup company to develop an indexing bicycle derailleur and wet weather caliper brake, on which I held patents.

1973-75 AMR CORPORATION (now AMRAY), Bedford, MA
Mechanical Engineer - Designed the complete mechanical system for the model 1200 scanning electron microscope, including the electron column, the vacuum system, stages, housings, camera and vibration isolation system.

1972-73 TRANSPORTATION SYSTEMS LABORATORY, Bedford, MA
Project Engineer - Responsible for the design, fabrication and testing of a prototype electric drive delivery truck for the U.S. Postal Service.

1967-72 Mechanical engineering design for NASA and Foster Miller Assoc.

1965-67 U.S. ARMY: Active duty as Captain, Ordnance Corps.

PATENTS: I hold 8 US patents. One is an indexing bicycle derailleur, and two cover wet-weather caliper brakes. The fourth is a hot-gas expansion engine using the involute scroll principle. Two for Eaton were methods of clamping semiconductor wafers during ion implantation. For ElectroScan, a video camera system for use inside an SEM vacuum chamber, and for FEI, a method of damping wafer vibrations.

CAD TOOLS: SolidWorks, AutoCAD.

COMMUNITY ACTIVITIES: In my church I have served as Chair of the parish committee, canvass committee, facilities and ministerial search committees, as a trustee, advisor for the high school and junior high youth groups. I have served on the boards of the Boston chapter of Ashoka, a third-world self-help organization, RePlace, a Lexington teen-age support center, the Lexington Ecumenical Resettlement Coalition, an organization which has settled a dozen Cambodian refugee families in Lexington, and The Lexington Players, a community theatre. I have taught high school physics and served as a middle school science enrichment volunteer. At MIT, I served as a volunteer instructor in the area of design for the developing world. I volunteered as a boatbuilding instructor with middle school and high school students. I currently serve on the board of WindowDressers, a non-profit that organizes pop-up factories that build insulating window inserts.

