

## NEIL SHEEHAN

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### Education:

Villanova University, Villanova, PA: BS Mechanical Engineering, 1968  
*Summa Cum Laude*  
*Newspaper Editor-in-Chief*  
*1993 Alumni Professional Achievement Award*

Harvard University, Cambridge, MA: Graduate School, 1968-1969  
*Engineering and Applied Physics*  
*National Science Foundation Fellow*

University of California, Berkeley, CA: Pre-Med Coursework, 1974-1975  
*Organic Chemistry and Biology*

### Experience:

1993-2019 **Consulting Engineer and Expert Witness** (1995-2019)  
Independent consulting engineer specializing in medical products design and development with a focus on medium and high volume disposable devices and components. (Expert witness information is available upon request.) Engineering clients, in alphabetical order, have included:

Arcturus (Mountain View, CA)	<i>Laser micro-dissection disposable elements and packaging designs.</i>
Better Care (San Francisco, CA)	<i>Male and female incontinence devices.</i>
BlueVine Ventures (Menlo Park, CA)	<i>Medical technology assessments.</i>
Cardeon, Inc. (Huntington Beach, CA)	<i>Specialty cardiac catheter.</i>
Cardiometrics (Mountain View, CA)	<i>Diagnostic cardiac catheter components.</i>
Decibel Instruments (Hayward, CA)	<i>Disposable elements for innovative hearing aid system.</i>

EconoMEDics Inc. (Palo Alto, CA)	<i>Medical devices for emerging markets.</i>
Eunoe, Inc. (Pleasanton, CA)	<i>Implantable Alzheimer's Disease devices.</i>
Fallbrook Engineering (Valley Center, CA)	<i>Various proprietary medical devices.</i>
FemmeSource Health (Pasadena, CA)	<i>Various gynecological diagnostic devices.</i>
Fogarty Engineering (Portola Valley, CA)	<i>Proprietary catheter devices.</i>
Heartstream (Seattle, WA)	<i>Multi-function defibrillator electrodes.</i>
Hexcel (Pleasanton, CA)	<i>Proprietary materials-based device.</i>
HiLife Therapeutics (So. San Francisco, CA)	<i>Lens enhancements for patient communications systems.</i>
Inpress Technologies (Menlo Park, CA)	<i>Postpartum hemorrhage (PPH) prevention device.</i>
Inviro Medical Devices (Vancouver, BC)	<i>Innovative safety syringes.</i>
IPT, Inc. (Palo Alto, CA)	<i>Umbilical cord blood sampler/clamp.</i>
Katecho, Inc. (Des Moines, IA)	<i>Multi-function defibrillator electrodes and other proprietary devices.</i>
Keimar, Inc. (Mountain View, CA)	<i>Proprietary in vivo measurement of blood parameters.</i>
KippGroup (Ontario, CA)	<i>Proprietary IV-related device.</i>
Lucent Medical (Bellevue, WA)	<i>Endoscopic tool containment systems.</i>
Mallinckrodt / Nellcor (Pleasanton, CA)	<i>Pulse oximetry sensors.</i>

Mayfield Fund (Menlo Park, CA)	<i>Medical technology evaluations.</i>
McGaw, Inc. (Irvine, CA)	<i>Cannula-based needle-less injection sites for IV administration.</i>
Medasonics (Fremont, CA)	<i>Transcranial ultrasonic (Doppler) probe mounting systems.</i>
MedicalCue (Mountain View, CA)	<i>Proprietary universal newborn screening technology.</i>
Medisystems (Seattle, WA)	<i>Hemodialysis bloodline components.</i>
Medtronic CardioRhythm (San Jose, CA)	<i>Cardiac ablation catheter systems.</i>
Minimus Surgical (Menlo Park, CA)	<i>Proprietary obesity surgery devices. (Founder)</i>
Natus Medical (San Carlos, CA)	<i>Advanced ear couplers and electrodes for newborn hearing screener.</i>
Nexan (Cambridge, UK)	<i>Proprietary multi-function electrode systems.</i>
Pneumation (Evergreen, CO)	<i>CPAP (Continuous Positive Airway Pressure) system for sleep apnea.</i>
R&D Medical (Lake Forest, CA)	<i>Various high-volume disposables including complex electrode systems.</i>
Rhaphis Medical (Sunnyvale, CA)	<i>Semi-automatic surgical suturing device for the third world.</i>
Starion (Palo Alto, CA)	<i>Proprietary electrosurgery device.</i>
Target Therapeutics (Fremont, CA)	<i>Packaging and delivery system for cranial catheter/coil occlusion device.</i>
Vigilo Networks (Cupertino, CA)	<i>Remote sensing of physiological parameters via disposable patch.</i>
Woodside Biomedical (Carlsbad, CA)	<i>Proprietary nerve stimulation electrode designs (disposable and reusable).</i>

- Woolsthorpe LLC  
(Brentwood, TN)      *Proprietary pulse oximetry applications.*
- Yono Labs  
(Mountain View, CA)      *Devices for sensing and tracking ear-based ovulation parameters.*
- 1989-1992      **Natus Medical Inc.**, Foster City, CA  
Vice President, Engineering and Manufacturing  
Medical electronics and disposables for neonates.  
*Start-up. Created and managed engineering, manufacturing, documentation, quality assurance, materials, clinical testing, customer and technical service. Established comprehensive vendor network. Thirty-five employees.*
- 1987-1989      **Nellcor Incorporated**, Hayward, CA  
Manager, Disposables Engineering  
Pulse oximetry and capnography.  
*Design, management of small staff, clinical research, marketing aids, national sales meeting presenter.*
- 1986-1992      **Medisystems Corporation**, San Francisco, CA  
Consultant  
Hemodialysis blood tubing sets and related components.  
*Individual contributor.*
- 1986-1987      **Critikon, Inc.**, San Jose, CA  
Senior Mechanical Engineer  
Intravenous delivery systems and sets.  
*Coordination of San Jose, Tampa and Japan Medical Supply.*
- 1985-1986      **Raychem Corp. / Menlo Care Inc.**, Menlo Park, CA  
Consultant  
Intravenous catheters and systems.  
*Individual contributor.*
- 1984-1985      **American Hospital Supply Corp.**, Emeryville, CA  
Senior Project Engineer  
Liquid handling systems, especially pipettors.  
*Individual contributor, liaison during transfer to American Dade.*
- 1982-1983      **Liquid Bracelet Company**, Berkeley, CA  
Sole Proprietor  
Liquid-filled (IV tubing) fashion jewelry (\$250,000 in sales).  
*Design, manufacturing, marketing, sales and public relations.*

- 1975-1982 **Cutter Laboratories**, Berkeley, CA  
Product Development Engineer  
Intravenous delivery systems and components.  
*Individual contributor, liaison to other plants.*
- 1969-1973 **Magnetic Head Corporation**, Hauppauge, NY  
Design Engineering Supervisor  
Magnetic tape heads for computer peripherals.  
*Created department, documentation and MRB systems.*
- 1965-1967 **Tangent Machine and Tool Corp.**, Farmingdale, NY  
Summers Tool Designer/Drafter and Machine Operator

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**Product designs, inventions and patents (partial list):**

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**Consultant**

Innovative manufacturing methods and devices for athletes (Rosecroft)  
*Extrusion, materials, adhesives, design configurations*  
**Patent No. 9,009,869 (April 21, 2015)**  
**Patent No. 9,585,427 (March 7, 2017)**  
**Patent No. 10,314,352 (June 11, 2019)**

Innovative percutaneous surgical devices and methods (Minimus)  
*Inflatable anchors, obesity applications, organ wall implantation*  
**Patent No. 8,070,673 (December 6, 2011)**

Innovative percutaneous surgical devices and methods (Minimus)  
*Tissue modification, obesity applications, anchor systems*  
**Patent No. 7,931,580 (April 26, 2011)**

Innovative percutaneous surgical devices and methods (Minimus)  
*Device implantation, obesity applications, fastener systems*  
**Patent No. 7,255,675 (August 14, 2007)**

Innovative safety syringes and accessories (Inviro)  
*Injection molding, assembly techniques, differential resistances.*  
**Patent No. 6,394,979 (May 28, 2002)**  
**Patent No. 6,616,632 (September 9, 2003)**

Chest-mounted, multi-function electrode systems (Nexan)  
*Rotary die cutting, hydrogels, adhesives, assembly techniques.*  
**Patent No. D 425,203 (May 16, 2000)**  
**Patent No. 6,385,473 (May 7, 2002)**

Packaging and delivery system for catheter/coil occlusion device (Target)  
*Injection molding, porous plastic, assembly techniques.*  
**Patent No. 5,669,931 (September 23, 1997)**  
**Canadian Patent No. 2173023C (August 28, 2001)**

Multi-function defibrillation electrode systems (Heartstream)  
*(Proprietary Information)*

Advanced ear coupler and electrode designs (Natus)  
*Injection molding, die cutting, acoustic shaping, universal disposable.*  
**Patent No. 5,826,582 (October 27, 1998)**  
**Patent No. 5,913,309 (June 22, 1999)**  
**Patent No. 6,386,314 (May 14, 2002)**

Transcranial Doppler mounting systems (Medasonics)  
*Silicone rubber, nitrile PVC molding, disposable and re-usable.*  
**Patent No. 5,390,675 (February 21, 1995)**

Tubing clamps, needle guards and protectors, CAPD components, chambers, filters, tubing, injection sites, tamper-evident luer cap and injection site, connector systems, etc. for hemodialysis bloodlines (Medisystems)  
*Injection molding, blow molding, assembly techniques, stereo lithography.*  
**Japanese Patent No. 9122230A2 (May 13, 1997)**  
**Patent No. 5,772,624 (June 30, 1998)**  
**Patent No. 6,165,149 (December 26, 2000)**  
**Patent No. 6,620,119 (September 16, 2003)**  
**Patent No. 6,666,839 (December 23, 2003)**

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### Natus Medical

Neonatal breath sampling system  
*Multi-lumen profile extrusion, activated carbon filters, OEM modifications.*  
**Patent No. 5,357,971 (October 25, 1994)**  
**Patent No. D 354,808 (January 24, 1995)**  
**Patent No. 5,404,885 (April 11, 1995)**  
**European Patent No. 0 648 088 B1 (August 16, 2001)**  
**European Patent No. 1 062 909 B1 (October 29, 2003)**

Super Jelly Button® electrode and other electrode designs  
*Special purpose modifications to off-the-shelf products, hydrogels.*

MiniMuffs™ neonatal noise attenuators for NICU babies  
*Laminated foam, vacuum forming, acoustics, sequential vendor assembly.*  
**Patent No. 5,243,709 (September 14, 1993)**

ALGO-PAK™ infant hearing screening supplies package  
*User-flexible, non-kit disposables pack, less packaging, more options.*

DRI-PREP™ prepping pads for electrode site preparation  
*Triple-laminated rotary die cutting, abrasives.*

Ear Couplers® disposable ear phones for infant hearing screener  
*PVC foam, steel rule die cutting, hydrogel attachment technique.*

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### **Nellcor**

Airway adapter family for multi-function (oximetry and capnography) monitor  
*Injection molding, filters (incl. hollow fiber), assembly techniques.*  
**Patent No. 5,101,817 (April 7, 1992)** with Correction

Dual-path sample tube assembly for multi-function monitor  
*Silicone rubber molding, solvent shrink sleeves, assembly techniques.*

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### **Medisystems**

Guarded winged needle assemblies  
*Multiple designs, injection molding, assembly techniques.*  
**Patent No. 5,112,311 (May 12, 1992)**  
**Patent No. 5,266,072 (November 30, 1993)**  
**Patent No. 5,433,703 (July 18, 1995)**  
**European Patent No. 0 436 646 B1 (August 31, 1994)**  
**European Patent No. 0 558 162 B1 (March 6, 1996)**

Assorted injection sites, tubing clamps, chamber components and filters, etc.  
*Ultrasonics, injection molding.*

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### **Critikon**

Complete (gravity, controller and pump) line of IV sets  
*Clean room assembly, packaging, sterilization, off-shore sourcing.*

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### **Menlo Care**

Adjustable catheter assemblies  
*Extrusion, injection molding, materials.*  
**Patent No. 4,728,322 (March 1, 1988)**  
**Canadian Patent No. 1273540A1 (September 4, 1990)**  
**Patent No. 4,955,863 (September 11, 1990)**  
**European Patent No. 0 233 055 B1 (July 3, 1991)**

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### **American Hospital Supply**

Multi-volume air displacement pipette

*Seals, precision grinding, assembly techniques, injection molding.*

**Patent No. 4,679,446 (July 14, 1987)**

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### **Sole Proprietorship**

The Liquid Bracelet™ fashion jewelry

*Consumer item, assembly techniques, fragrance, million pieces sold.*

The Original Halley's Comet Ball™ novelty toy

*Consumer item, assembly techniques, packaging, millions sold.*

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### **Cutter Laboratories**

Injection site for fluids / UltraSite™ #2

*Ultrasonic welding, assembly techniques, automatic assembly.*

**Patent No. 4,416,661 (November 22, 1983)**

Swage-molded injection site / UltraSite #1

*Ultrasonic swaging, injection molding, universally adopted design.*

**Patent No. 4,294,249 (October 13, 1981)**

Injection device / injection bulb

*Compression molding, sealing techniques, swabbing techniques.*

**Patent No. 4,252,117 (February 24, 1981)**

Caged disc valve for volumetric chamber

*Compression molding, injection molding, ultrasonic assembly.*

**Canadian Patent No. 1157722A1 (November 29, 1983)**

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### **Magnetic Head Corporation**

Method of manufacturing magnetic heads

*Casting, precision machining, assembly techniques.*

**Patent No. 3,678,576 (July 25, 1972)**

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### **Professional Affiliation:**

Society of Plastics Engineers (Member *Emeritus*)