

## EUGENE FITZGERALD

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### Education and Training

M.I.T.	Materials Science and Engineering	B.S., 1985
Cornell University	Materials Science and Engineering	M.S., 1987
Cornell University	Materials Science and Engineering	Ph.D, 1988

### Research and Professional Experience

Current Position: MIT	Merton C. Flemings-SMA Chair Professor of Materials Engineering	2003-present
MIT SMART Singapore-MIT Alliance for Research and Technology, MIT's Research Center in Singapore)	Chief Executive Officer	2019-2024
MIT SMART Low Energy Electronic Systems	Lead Principal Investigator	2012-2024
Nanyang Technological University EEE	Visiting Professor	2014-2020
Cornell University Johnson School of Management	Visiting Professor of Management	2006-2014
Massachusetts Institute of Technology, Department of Materials Science and Engineering	Professor	2000-present
Massachusetts Institute of Technology, Department of Materials Science and Engineering	Associate Professor	1994-2000
AT&T Bell Laboratories	Research Scientist	1988-1994

### Areas of Research Experience and Expertise:

Semiconductor Materials, Processes, and Devices; III-V (compound) Semiconductors (GaAs, InP, GaN, etc.); IV Semiconductors (Si, Ge, Sn, C); Heteroepitaxy; III-V/Si heteroepitaxy; defects in lattice-mismatched films; III-V devices (LEDs, HEMTs, etc); IV (Silicon, Germanium) devices (detectors, MOSFETs, etc); solar cell devices; integrated circuits; water purification, materials and processes; innovation processes; commercialization and entrepreneurship; serial innovator and entrepreneur

### **Technology Transition and Company Formation:**

Co-Founder and Chairman, New Silicon Corporation (nsc) Pte. Ltd., Singapore (2016-present): a fabless integrated circuit company with proprietary out-sourced fabrication technology based on III-V devices incorporated into silicon manufacturing processes

Co-Founder and Chairman, AmberWave Systems Corporation (1998-2004): Invented, commercialized, and properly anticipated introduction of strained silicon technology by silicon CMOS industry. Pioneered AmberWave's internal IP group and process for creating IP-base for licensing. Intel licensed AmberWave's technology in 2007, and TSMC later purchased IP portfolio.

Founder and LLC Member-Manager, Paradigm Research LLC (2005-present): Implementation of profitable global out-sourced research model to exploit disequilibrium in current technology supply chain; developed first III-V-Si CMOS IC in partnership with Raytheon

Co-Founder and LLC Member-Manager, 4Power LLC (2005-present): A disruptive business model for high-end solar cells, based on a novel III-V/Si technology which allows for unprecedented efficiency and low weight at low cost

Co-Founder and Executive Director, Innovation Interface (2008-2014): a novel corporate-university interface for innovation production and learning

Founding Team and Principal, The Water Initiative (2007-2017): innovation in point-of-use water purification systems; sold and deployed >100,000 systems in central valley of Mexico

### **Synergistic Activities and Awards (Highlights)**

\*2016 Cornell Distinguished Alumni Award, Department of Materials Science and Engineering

\*2011 IEEE Andrew S. Grove Award (outstanding contributions to solid-state devices and technology): specifically, "For seminal contributions to the demonstration of Si/Ge lattice mismatch strain engineering for enhanced carrier transport properties in MOSFET devices"

\*IEEE 2004 EDS George Smith Award

\*Member, MIT President's Committee on "The Future of MIT Education", 2013

\*Member, MIT President's Committee on "The Innovation Initiative", 2013

\*Chair, External Advisory Board, Institute for Materials Research, Ohio State University (present)

\*Founding Faculty Team creating MIT's Innovation and Entrepreneurship Minor (2016)

Launched first core class "Venture Engineering" for the new MIT I&E minor. Course is bridging the gap between MIT's Sloan School of Management and MIT's Engineering School to deliver broad problem-solving skills (including forming new organizations) to engineers

\*Member of start-up team that developed highly successful Advanced Materials program in the Singapore-MIT Alliance, 1998-2009

\*MITx/edX 3.086 Innovation and Commercialization

First innovation class on MITx launched in fall of 2013. Recognized as a factor which can aid US innovation and economic growth by the White House, Executive Branch, US Government

\*Developed Master of Engineering Degree, DMSE MIT. Interdisciplinary engineering degree, adding emphasis on non-technical aspects of technology evolution and development; also became dual-degree program in Singapore-MIT Alliance 2

\*Created 3.207 Technology Development and Evaluation (circa 2001). Led MIT students and Singaporean students located in Singapore (real-time distance education technology) through the analysis of technology, potential applications, intellectual property, and business models for embryonic technology

\*Robert Lansing Hardy Medal (promising young scientist), TMS, 1994

### **Books**

E.A. Fitzgerald, A. Wankerl, C. Schramm, *Inside Real Innovation* (World Scientific, Singapore), 2011. (multiple printings)

### **Publications and Patents**

More than 500 published technical articles

More than 100 patents issued

>800 publications and patents in Google Scholar

38,000 citations

Hindex=100

<https://scholar.google.com/citations?user=YsZ6EjkAAAAJ&hl=en>