

**Awards of
Excellence**

Selected Awards:

- **2019 President’s Medal, University at Buffalo (UB).** The UB President’s Medal, first presented in 1990, recognizes “*outstanding scholarly or artistic achievements, humanitarian acts, contributions of time or treasure, exemplary leadership or any other major contribution to the development of the University at Buffalo and the quality of life in the UB community.*” This is among the highest recognitions given at the university. To date, there have been only 33 University at Buffalo *President’s Medal* Recipients.
- **2018 Member, National Academy of Engineers (NAE).** Elected Member of the National Academy of Engineers, USA for “*For materials science advances and contributions enabling commercialization of high-temperature superconducting materials.*” Election to the National Academy of Engineering is among the highest professional distinctions accorded to an engineer. Academy membership honors those who have made outstanding contributions to "engineering research, practice, or education, including, where appropriate, significant contributions to the engineering literature" and to "the pioneering of new and developing fields of technology, making major advancements in traditional fields of engineering, or developing/implementing innovative approaches to engineering education."
- **2017 R&D100 Award** for developing the technology titled “*High-Performance, low-cost, flexible, single-crystal-like, GaAs-based Thin Film Transistors*”.
- **2016 R&D100 Award** for developing the technology titled “*Low-Cost, Flexible, Single-Crystal-Like, Large-Area, CdTe Substrates For Epitaxial Electronic & Electrical Devices*”.
- **2015 Member, National Academy of Inventors (NAI).** Elected Member and Fellow of the National Academy of Inventors, USA for “*having demonstrated a highly prolific spirit of innovation in creating or facilitating outstanding inventions that have made a tangible impact on quality of life, economic development and the welfare of society.*” Included among all NAI Members and Fellows are 61 presidents and senior leadership of research universities and non-profit research institutes, 208 members of the other National Academies (NAS, NAE, IOM), 21 inductees of the National Inventors Hall of Fame, 16 recipients of the U.S. National Medal of Technology and Innovation, 10 recipients of the U.S. National Medal of Science and 21 Nobel Laureates.
- **2013 R&D100 Award** for the technology titled “*Large-Area, Flexible, Single-Crystal-Like, GaAs Substrates For Epitaxial Electronic & Electrical Devices*”.
- **2012 World Technology Award in the Category of “Advanced Materials”.** The prestigious World Technology Awards are presented by the World Technology Network (WTN) in association with *Time, Fortune, CNN, Science/AAAS* and *MIT’s Technology Review Magazine* with a stated goal to recognize “*individuals and companies for innovations of the greatest long-term significance*” in their respective fields. Winners were announced in 10 corporate categories and 20 individual categories including the Arts, Biotechnology, Communications, Energy, Environment, Finance, Health & Medicine, IT, Materials, Law, Policy, Space, among others. The 2012 World Technology Awards were announced in a black-tie awards ceremony at the Time & Life Building in Manhattan, NYC on Oct. 23, 2012. *Other World Technology Award recipients in the category of Materials include Nobel Laureate Alan Heeger (2013) and in previous years George Whitesides, Frederick Seitz and Michael Graetzel.*
- **2012 R&D100 Award** for developing the technology titled “*Highest Pinning Force, High-Temperature Superconducting Wires with Double-Perovskite Tantalate Nano-Pinning Centers*”.
- **Fellow, Materials Research Society (MRS), February 2012.** The title of MRS Fellow honors those MRS members who are notable for their distinguished research

accomplishments and their outstanding contributions to the advancement of materials research, world-wide. The maximum number of new Fellow appointments each year is limited to 0.2% of the current MRS membership. The distinction is highly selective.

- **2011 DOE's E. O. Lawrence Award for "Energy Science & Innovation"**. The E. O. Lawrence award is awarded on behalf of the *President of the United States by the US Department of Energy Secretary* to outstanding scientists. This award in the *inaugural* category of Energy Science and Innovation recognizes transformative accomplishments related to DOE's investments in "use inspired" scientific research to develop new understanding, methodologies and materials required to advance, promote, and enable energy innovation. *The Ernest Orlando Lawrence Award was established in 1959 in honor of the Nobel winning scientist who helped elevate American physics to world leadership.* Only Lawrence Award Winner that was invited by Secretary Chu to give the first-ever science lecture at USDOE (<http://www.osti.gov/sciencecinema/biblio/1043697>).
- **2011 National Federal Laboratory Consortium Excellence in Technology Transfer Award** for the technology titled – "*Flexible Thin-Film Crystalline-Silicon Photovoltaics*".
- **2011 R&D100 Award** for developing the technology titled "*Ultra-high Density Storage Media*". The product is the first report of successful fabrication of a 1 Tb/in² storage media made using a process of nanoscale self-assembly.
- **2010 R&D100 Magazine's "Innovator of the Year" Award**: The "Innovator of the Year" Award is given for collective lifetime contributions. *Among the other 9 past recipients of this honor are Larry Page (co-founder of Google), Elon Musk (Inventor of PayPal, Tesla) and Dean Kaman (inventor of the Segway).* Widely recognized as the "Oscars of invention", the R&D100 awards are given to the most innovative products developed in any field world-wide in that calendar year.
- **2010 R&D100 Award** for developing the technology titled "*High-Performance, High-T_c Superconducting Wires enabled via Self-assembly of Non-superconducting Columnar Defects*". The product is an ultra-high performance HTS Wire in which the performance has been significantly enhanced by the creation of self-assembled, nanoscale, non-superconducting columnar defects. Most high-performance HTS wires fabricated world-wide use this technology.
- **2010 R&D100 Award** for developing the technology titled "*Flexible, Large-area, Single Crystal-like, Si-based Semiconductor Substrates*". This technology allows fabrication of low-cost, large-area (kilometer-long and meter wide), single-crystal-like substrates having a heteroepitaxially grown, single-crystal-like semiconductor surface. Flexible Si can be used for fabricating many devices such as low-cost, high-efficiency solar cells. A Battelle Ventures funded, startup company, Ampulse Inc. was formed to attempt commercialization of crystalline Si-based solar cells based on this technology.
- **2010 ASM-IIM Lectureship Award**: ASM-IIM (American Society of Metals - Indian Institute of Metals) Visiting Lecturers are Ambassadors-at-large of ASM International to the materials community in India. The ASM-IIM visiting lectureship program, established in 1979, is intended to promote international cooperation between ASM International and the materials community in India.
- **2009 R&D100 Award** for developing the technology titled "*Superconducting "Wires" by Epitaxial Growth on SSIFFSTM*". The product is a "round" or low-aspect ratio, flexible, single-crystal, high-temperature superconducting wire with high performance for wide-ranging applications. This is the only 3rd generation HTS wire technology world-wide.
- **2009 Distinguished Alumnus Award** from the Indian Institute of Technology (IIT), Kharagpur, India. IIT Kharagpur is the oldest of the famous IIT's and has a long list

of very distinguished alumnus. Two other people also receiving this honor from IIT in 2009 include the CEO and Managing Director of Tata Motors Ltd., India (Tata Motors is the largest automobile manufacturer in India and also owns Land rover and Jaguar) as well as the President and Managing Director of Texas Instruments, India.

- **Fellow, WTN. Elected Fellow of the World Technology Network (WTN) July, 2009.** The World Technology Network (WTN) is a global meeting ground, a virtual think tank, and an elite club whose members are all focused on the business and science of bringing important emerging technologies of all types (from biotech to new materials, from IT to new energy sources) into reality. The WTN's membership is comprised of approximately 1000 members from more than 60 countries, judged by their peers to be the most innovative in the technology world. Most fellows in the "Materials" category are well-known and many are members of NAE and/or NAS.
- **2008 Nano50TM Innovator Award:** This award recognizes individuals who are leaders or pioneers in a specific area of nanotechnology and having a significant background of accomplishments in advancing the state of the art. The recognition was given for contributions to self-assembly of nanomaterials to form novel nanocomposites. His research was the first to demonstrate 3D self-assembly of one complex oxide material within another complex material. Developed with LDRD and DOE support, this self-assembly process was used to create insulating columns of non-superconducting materials within superconducting wires to significantly enhance their performances in high applied magnetic fields.
- **Fellow, APS. Elected Fellow of the American Physical Society (APS) Nov., 2008.** The APS is the world's leading physics society and is a leader in advancing and disseminating the knowledge about Physics. Less than one-half of one percent of the APS membership is elected for Fellow status.
- **2008 National Federal Laboratory Consortium Excellence in Technology Transfer Award** for the technology titled – "*High-Performance LaMnO₃-Enabled, High-Temperature Superconducting Tape*". This national level award is given for advancing technologies from the laboratory to the marketplace. The award was again in collaboration with SuperPower Inc. located in Albany, NY.
- **2007 "Pride of India" Gold Award:** Sponsored by the NRI Institute, the award recognizes people of Indian origin around the world for outstanding achievements in their chosen fields. It also recognizes public service contributions toward the economic development of India and their country of residence. The NRI Institute is an international NGO of Indians, Non-resident Indians (NRI's) and Persons of Indian Origin (PIO's) with chapters world-wide in India, America, Europe, Asia, Middle-east and Australia. Award recipients were chosen from leaders, pioneers and professionals world-wide from the fields of Technology, Medicine, Business Management, Legal, Creative Arts, Public Service, or Academia. Non-Resident Indians (NRI's) or People of Indian Origin (PIO's) who serve as an inspiration to fellow NRIs, and who are recognized as pioneers in their professions were selected. Over 400 leaders in business, government, and education from all over the world attended the awards gala held at the Marriott Hotel in North Bethesda, MD on Sept. 28, 2007 and the award was bestowed by the *Indian Ambassador* to the USA. Many other notable guests were present including a member of India's Parliament, the President of the US-India Business Council as well as representatives from the local Congressman's office.
- **2007 MICRO/NANO 25 Award** from the R&D100 magazine for developing the technology titled "*Nanocomposites via Epitaxial, 3-D Self-Assembly of Nanodots of One Complex Material within Another*". The MICRO/NANO 25 awards are given to the most innovative micro/nano technologies or products developed in any field world-wide in that calendar year. The award winning products, processes, and innovations were those groundbreaking technologies likely to have a large impact on their specific industries and society.

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| | <ul style="list-style-type: none"> • <u>2007 R&D100 Award</u> for developing the technology titled “<i>High-performance LMO-Enabled High-temperature Superconducting Wire</i>”. The award was in collaboration with SuperPower Inc. located in Albany, NY. • <u>2007 Southeast Federal Laboratory Consortium Excellence in Technology Transfer Award</u> for the technology titled – “<i>High-Performance LaMnO₃-Enabled, High-Temperature Superconducting Tape</i>”. The award was again in collaboration with SuperPower Inc. located in Albany, NY. • <u>Fellow, ACERS. Elected Fellow of the American Ceramics Society (ACERS) May, 2007.</u> The American Ceramic Society is a global leader among professional organizations in supporting scientific research, emerging technologies, and current applications, in which ceramic materials are a key element. Election to Fellow status is quite selective. • <u>2006 Rochester Distinguished Scholar Medal</u> from the University of Rochester¹, NY. Given by the university to graduates who have had distinguished careers, most often in academia, industry or government. <i>Over the years there have less than 25 named Rochester Distinguished Scholars.</i> This award was bestowed at the 2006 Annual Commencement at the University of Rochester on May 20th and the recipient was also requested to address the graduating class during the Annual Doctoral Commencement Ceremony. • <u>2006 Nano50 Award</u> for the technology titled “<i>The HTS Wires Enabled via 3D Self-Assembly of Insulating Nanodots</i>” presented by <i>Nanotech Briefs</i> magazine – the monthly digital publication from the publishers of <i>NASA Tech Briefs</i> – the Nano 50 recognizes the top 50 technologies, products, and innovators that have significantly impacted, or are expected to impact, the state of the art in nanotechnology. <i>Nanotech Briefs</i> magazine claims that the winners of the Nano 50 awards are the “best of the best” – the innovative people and designs that will move nanotechnology to key mainstream markets. Nano 50 nominations were judged by a panel of nanotechnology and MEMS experts. The technologies, products, and innovators receiving the 50 highest scores were named Nano 50 award winners. The award was given at the National Nano Engineering Conference in Boston, Nov. 9-10, 2006. • <u>2006 ORNL Inventor-of-the-Year Award</u> from Battelle Memorial Institute, Columbus, Ohio. Awarded on April 28, 2006 at the 2006 Battelle Annual Recognition and Reward Banquet, Columbus, Ohio. Was named a “Battelle Star” at the banquet. • <u>2006 ASM-IIM Lectureship Award:</u> ASM-IIM (American Society of Metals - Indian Institute of Metals) Visiting Lecturers are Ambassadors-at-large of ASM International to the materials community in India. The ASM-IIM visiting lectureship program, established in 1979, is intended to promote international cooperation between ASM International and the materials community in India. • <u>2006 Excellence in Technology Transfer Award</u> from UT-Battelle. This award was given for the development, patenting, and transfer of high throughput buffer layer technology being commercialized by SuperPower, Inc. involving ion-beam-assisted deposition, that enabled the achievement of world record performance in SuperPower's long-length second-generation superconducting wires. • <u>2005 Award for Excellence in Science & Technology</u> from UT-Battelle, Dec. 2005. Citation of award was: “For establishing an intellectual property portfolio that has resulted in ORNL’s world-wide dominance in high temperature superconducting |
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¹ The University of Rochester (located in Rochester, N.Y.) is one of the nation's leading private universities. The University which started in 1850, consistently ranks among the top colleges and universities nationwide in federally financed science, engineering, medical, and other research. In research productivity, the University ranks 12th among leading private universities nationwide. Rochester faculty and alumni have included eight Nobel Prize winners and 12 Pulitzer Prize winners. Rochester is a leading user and charter member in the University Research Association, which manages Fermilab, the world's highest-energy accelerator, in Batavia, Illinois.

wire fabrication.”

- **2005 Global Indus Technovator Award** awarded by a group based at MIT, Boston. The Global Indus Technovator Awards have been instituted to recognize and felicitate 10 distinguished innovators of Indus origin (countries in South Asia) working at the cutting-edge of technology that may be harnessed for far-reaching applications.
- **Fellow, ASM. Elected Fellow of the American Society of Metals (ASM), July, 2005.** ASM International is a society whose mission is to gather, process and disseminate technical information. ASM fosters the understanding and application of engineered materials and their research, design, reliable manufacture, use and economic and social benefits. This is accomplished via a unique global information-sharing network of interaction among members in forums and meetings, education programs, and through publications and electronic media.
- **2005 Exceptional Accomplishment Award** from DOE for “Exceptional Performance” at the 2005 U.S. Department of Energy Superconductivity Program Review. Certificate signed by Mr. William Parks, Acting Director, Office of Electric Transmission & Distribution and Dr. James Daley, Manager, DOE Superconductivity Program.
- **Fellow IOP. Elected Fellow of the Institute of Physics (IOP), UK, July, 2005.** The Institute of Physics is a leading international professional body and learned society with over 37,000 members, which promotes the advancement and dissemination of a knowledge of and education in the science of physics, pure and applied. It has a world-wide membership and is a major international player in: scientific publishing and electronic dissemination of physics; setting professional standards for physicists and awarding professional qualifications; and promoting physics through scientific conferences, education and science policy advice.
- **2004 Exceptional Accomplishment Award** from DOE for “Exceptional Performance” at the 2004 U.S. Department of Energy Superconductivity Program Review. Certificate signed by Mr. William Parks, Acting Director, Office of Electric Transmission & Distribution and Dr. James Daley, Manager, DOE Superconductivity Program.
- **Outstanding Young Tennessean Award, 2004.** Awarded by the Tennessee Junior Chamber of Commerce to recognize people who have risen to the top of their chosen fields and now act as role models for America’s youth. Past recipients of this award include former US Vice President Al Gore, Present Congressman Harold Ford from Memphis, Present Congressman Zack Wamp from Oak Ridge, Late Elvis Presley and many more.
- **Fellow, AAAS. Elected Fellow of the American Association for Advancement of Science, Oct. 2004.** The American Association for the Advancement of Science (AAAS) is an international non-profit organization dedicated to advancing science around the world by serving as an educator, leader, spokesperson and professional association. Election to Fellow status is highly selective.
- **Fellow, WIF. Elected Consulting Fellow of the World Innovation Foundation (WIF), Oct. 2004.** The WIF was founded by the late Nobel Laureate Dr. Glenn Seaborg, and the current President is Nobel Laureate Dr. Jerome Karle. The WIF is an international, multidisciplinary consultative research group that advises nations and their governments behind the scenes. There are currently about 2000 WIF members and fellows throughout the world, including 57 Nobel Laureates.
- Designated **"Battelle Distinguished Inventor"**, *inagural class*. Photograph and plaque put up in Battelle’s Inventor’s Hall of Fame, February 2003. Battelle distinguished inventors are chosen from all the national laboratories managed by Battelle for USDOE.
- **Exceptional Accomplishment Award** from DOE for “Exceptional Performance” at

the 2003 U.S. Department of Energy Superconductivity Program Review. Certificate signed by Mr. Jimmy Glotfelty, Director, Office of Electric Transmission & Distribution and Dr. James Daley, Manager, DOE Superconductivity Program.

- **DOE's Energy 100 Award in 2001** for developing the RABiTS Technology. These awards are for the finest 100 scientific accomplishments of the US Department of Energy since it opened its doors in 1977. Received a personal letter of congratulations from then U.S. Energy Secretary, Mr. Bill Richardson.
- **2001 Federal Laboratory Consortium Award** for excellence in technology transfer for the RABiTS technology. Received a personal letter of congratulations from our present Energy Secretary, Mr. Spencer Abraham.
- **1999 Massachusetts Institute of Technology's, Technical Review, TR100 – Award.** This was an award for top 100 young innovators worldwide in any field of high technology whose inventions may make a *significant impact to technology in the next millennium*. Also, included in the 1999 TR100 innovators are the founders of Netscape, Yahoo, Hotmail and many other successful internet and advanced technology startups. The TR100 were chosen by a committee comprising three Nobel Laureates, head of the NASDAQ Stock Exchange, several leading University Presidents, CEO's and Vice-Presidents of some leading multinationals and Senior Partners of leading Venture Capital firms in the Silicon Valley.
- **1999 Inventor of the Year Award**, Oak Ridge National Laboratory. This was for *sustained* innovative accomplishments over an extended period of time.
- **1999 R&D 100 Award** for developing the RABiTS Technology. R&D100 awards are given to the most innovative products developed in any field world-wide in that calendar year.
- **1999 R&D Sustained Development Accomplishment Award**, Oak Ridge National Laboratory. This is a *high* technical award given at ORNL.
- **1999 American Museum of Science & Technology's "Tribute to Tennessee Technology" Award.** Given to the most important and significant technologies developed in the Tennessee area.
- **1999 R&D Significant Development Accomplishment Award**, Oak Ridge National Laboratory.
- **1997 Lockheed-Martin NOVA Award** for technical achievement. NOVA is the *highest* corporate award given by Lockheed-Martin Corporation.
- **1997 R&D Significant Technical Accomplishment Award**, Oak Ridge National Laboratory.