



## Engineering Materials Achievement Award

### **1970**

For broad engineering achievements, including metals, fluids, and non-metallics, to achieve aircraft innovations through teamwork with many companies.

#### **LOCKHEED AIRCRAFT CORPORATION**

Clarence L. (Kelly) Johnson

### **1971**

For pioneering efforts in the development of pelletized iron ore.

#### **ARMCO STEEL CORPORATION**

C. William Verity, Jr., Harry Holiday, Jr., Kenneth M. Haley

#### **BETHLEHEM STEEL CORPORATION**

Steward S. Cort, P. L. Steffensen

#### **THE CLEVELAND CLIFFS IRON COMPANY**

H. Stuart Harrison, Louis Erck

#### **FORD MOTOR COMPANY (FORD STEEL DIVISION)**

Henry Ford II, Robert Bodor

#### **UNIVERSITY OF MINNESOTA**

Malcolm Moos, Edward W. Davis

#### **OGLEBAY NORTON COMPANY**

John J. Dwyer, Henry K. Martin

#### **PICKANDS MATHER & COMPANY**

Robert S. Carey, Fred DeVaney, Herbert C. Jackson

#### **REPUBLIC STEEL CORPORATION**

W.B. Boyer, Charles M. White, William Kelley, Fred Darner



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### **1972**

For the development of Zircaloy alloy systems and their contributions to nuclear energy.

#### **WESTINGHOUSE BETTIS ATOMIC POWER LABORATORY**

W.E. Shoupp, Kenneth M. Goldman, Robert B. Gordon, William A. Johnson, Donald E. Thomas

### **1973**

For the development and application of man-made diamonds and borazon.

#### **GENERAL ELECTRIC COMPANY**

Arthur M. Bueche, Harold P. Bovenkerk, Francis P. Bundy, Robert C. DeVries, H. Tracy Hall, Rodney E. Hanneman, Lewis E. Hibbs, Jr., Herbert M. Strong, Robert H. Wentorf, Jr.

### **1974**

For the development of the high silicon aluminum alloy, 390, for the Vega engine.

#### **GENERAL MOTORS CORPORATION, CHEVROLET MOTOR DIVISION**

James McLernon

#### **REYNOLDS METALS COMPANY**

William G. Reynolds, Sr.

### **1975**

For contributions to the materials engineering aspects of gas turbine engines as exemplified by the development of directional solidification and an early total commitment to the introduction of titanium.

#### **PRATT & WHITNEY AIRCRAFT**

#### **DIVISION OF UNITED TECHNOLOGIES CORPORATION**

R. J. Coar, Elihu F. Bradley, Francis L. VerSnyder

### **1976**

For the development of the Zincrometal coil-coated materials system in direct response to an automotive industry need for a corrosion-resistant, weldable and formable carbon steel for



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exterior, highly visible components. Diamond Shamrock conceived the idea, developed the chromate undercoat and established coil coating parameters. Wyandotte Paint Products developed the required zinc-rich paint topcoat. Ford Motor supported the material's development and conducted numerous tests to confirm its properties. Inland Steel recognized the material's merits and was the first steel producer to offer it commercially.

### **DIAMOND SHAMROCK CORPORATION**

C.A. Cash, J. Lynn Fordham

### **FORD MOTOR COMPANY**

Robert B. Alexander

### **INLAND STEEL COMPANY**

Derrick L. Brewster, Henry P. Leckie, Peter F. Connor

### **WYANDOTTE PAINT PRODUCTS COMPANY**

C.A. Brethen, Thurlow Geeck

## **1977**

For the development and commercialization of an argon-oxygen decarburization process for stainless and high-alloy steels.

### **JOSLYN STAINLESS STEELS DIVISION, JOSLYN MANUFACTURING & SUPPLY COMPANY**

Alan M. Smith, Edwin E. Hodgess

### **LINDE DIVISION, UNION CARBIDE CORPORATION**

Frank Death

## **1978**

For the development and application of Kevlar aramid fiber.

### **E. I. du PONT de NEMOURS & COMPANY INCORPORATED**

David K. Barnes

Herbert Blades, Robert L. Hunter



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Stephanie L. Kwolek, Paul W. Morgan

### **1979**

For the invention of hot isostatic pressing (HIP) and the development of basic HIP furnace technology.

#### **BATTELLE MEMORIAL INSTITUTE**

Sherwood L. Fawcett, Charles B. Boyer

### **1980**

For development and commercialization of monolithic catalyst technology for control of automotive emissions.

#### **ENGLEHARD INDUSTRIES DIVISION, ENGLEHARD MINERALS & CHEMICALS CORPORATION**

Milton F. Rosenthal, Carl D. Keith

#### **CORNING GLASS WORKS**

Thomas C. MacAvoy, Rodney D. Bagley

#### **TECHNICAL CERAMICS PRODUCTS DIVISION/3M**

E. Wayne Bollmeier, James R. Johnson, William M. Brown

### **1981**

For the development and commercialization of the Lucalox® High Pressure Sodium Lamp.

#### **GENERAL ELECTRIC COMPANY LIGHTING BUSINESS GROUP**

Ralph D. Ketchum, Charles I. McVey

### **1982**

For the Sikorsky S-76 Civil Helicopter. High performance is largely attributable to the innovative application of advanced materials. Contributions to technology include the successful application to a commercial aircraft of relatively large amounts of advanced composites;



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contributions to society include the aircraft's fuel economy, low noise and economical use in offshore oil operations.

### **SIKORSKY AIRCRAFT DIVISION**

#### **UNITED TECH-NOLOGIES CORPORATION**

Robert Zincone, A. Albert

### **1983**

For development of materials processing technology capable of producing low optical loss, silica waveguide fibers, permitting introduction of lightwave systems into telecommunications applications.

### **CORNING GLASS WORKS**

Richard Dulude, Donald B. Keck, Robert D. Maurer, Peter C. Schultz

### **WESTERN ELECTRIC COMPANY**

#### **and its subsidiary BELL TELEPHONE LABORATORIES, INC.**

Donald E. Procknow, John B. MacChesney, Fred Partus

### **1984**

For the development of, and subsequent contributions to Winchester Magnetic Recording Technology for computer disk file storage systems.

### **INTERNATIONAL BUSINESS MACHINES CORPORATION**

John E. Bertram, Jack D. Kuehler, John M. Harker, Kenneth E. Haughton

### **1985**

For the innovative combination of materials technologies utilized in the development and manufacture of the Pontiac Fiero.

### **PONTIAC MOTOR DIVISION**

#### **GENERAL MOTORS CORPORATION**

Hulki Aldikacti



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### **1986**

For the innovative combination of alloying materials and processing techniques developed for producing and implementing single crystal superalloy gas turbine airfoils.

#### **PRATT & WHITNEY ENGINEERING DIVISION, UNITED TECHNOLOGIES CORPORATION**

Irwin Mendelson, Maurice Gell

### **1987**

For the development and application of ferromagnetic amorphous metal alloys to distribution transformers representing a major advance in the efficiency of electric power distribution systems.

#### **GENERAL ELECTRIC COMPANY**

Eugene J. Kovarik, Larry Lowdermilk, Lyman A. Johnson

#### **METGLAS PRODUCTS DIVISION OF ALLIED SIGNAL, INC.**

Frederic M. Poses, David C. Hill

#### **ELECTRIC POWER RESEARCH INSTITUTE**

Floyd Culler, Narain G. Hingorani

#### **EMPIRE STATE ELECTRIC ENERGY RESEARCH CORPORATION**

George E. Watkins, Herbert M. Kaufman

### **1988**

For the development and implementation of a 33-layer metal and ceramic thermal conduction module and large printed circuit board technologies for high performance computer systems.

#### **IBM CORPORATION**

P.A. Toole, George A. Walker

Donald P. Seraphim

### **1989**

For the development and application of sol-gel technology involving heterogeneous nucleation



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(seeding) in a new and innovative way to produce ceramic abrasives of exceptional strength, hardness and density.

### **NORTON COMPANY**

John M. Nelson, Joseph E. Patchett

#### **1990**

For the development and implementation of transoceanic optical fiber communication systems providing increased use of data and video communications across oceans, thereby contributing to the uniting of the global community.

### **AT&T BELL LABORATORIES**

John E. Berndt, Raymond D. Tuminaro, Kenneth L. Walker

#### **1991**

For a multifaceted, innovative application of materials engineering and precision process technology resulting in the development and manufacture of disposable thermal ink jet printheads.

### **HEWLETT-PACKARD COMPANY**

David Packard, Frank Cloutier

#### **1992**

For innovative development and manufacture of a revolutionary combination of electronic packaging materials for high performance computers based on glass-ceramic/copper multilayer substrate.

### **IBM CORPORATION**

Michael Attardo, Shakil Ahmed, Rao Tummala

#### **1993**

For the development and application of an innovative optical design and a unique combination of material and process technology resulting in a high performance engineered materials system, Scotchlite Brand Reflective Sheeting Diamond Grade Products, for safer traffic control.



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### 3M CORPORATION

M. George Allen, Roger H. Appeldorn

#### **1994**

For the invention, development and commercialization in electric devices of an entirely new class of high performance permanent magnets based on a novel rare earth-iron-boron compound produced by rapid solidification--Magnequench.

### GENERAL MOTORS CORPORATION

John G. Larson, John J. Croat

#### **1995**

For the development and commercialization of aluminum coated ferritic stainless steels for automotive exhaust applications extending exhaust system life and providing significant economic and environmental benefits.

### ARMCO INC.

Stephen W. Gilby

### AK STEEL CORPORATION

Richard M. Wardrop, Jr., Farrell M. Kilbane

#### **1996**

For the development of the first commercial, positive deep-UV photoresist with outstanding resolution for the manufacture of Very Large Scale Integrated Circuits used in a new generation of electronic components for computers and telecommunication systems.

### LUCENT TECHNOLOGIES, BELL LABORATORIES

William F. Brinkman, Elsa Reichmanis

### OLIN MICROELECTRONIC MATERIALS

Steven T. Warshaw





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### **1997**

For the materials selection, surface engineering and commercialization of the Multi-layer IR Reflective Lamp Coating, a breakthrough in energy efficiency in incandescent lighting technology.

#### **GENERAL ELECTRIC COMPANY**

Frederic (Fred) Ahlgren, John F. Ackerman

### **1998**

For the development, implementation, and commercialization of a non-chromated anodizing process, providing significant environmental benefits and enhanced corrosion protection of aluminum parts and products.

#### **THE BOEING COMPANY**

Mr. Robert A. Davis

### **1999**

For the innovative development, commercialization, and successful application of CARILON® aliphatic polyketone polymers as a new family of engineering materials.

#### **SHELL CHEMICAL COMPANY**

Dr. Dale R. Holecek, Mr. Richard L. Danforth

### **2000**

For the development and mass commercialization of a colored decorative finishing process, commercialized as Lifeshine™, which confers enhanced resistance to abrasion, corrosion and chemical attack, extending the life of consumer products and providing significant environmental benefits by eliminating problematic manufacturing processes.

#### **MOEN INCORPORATED**

Mr. Jeffrey A. Svoboda, Dr. Timothy J. O'Brien

### **2001**

For the development, application and commercialization of semi-solid injection molding of



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metals known as Thixomolding.

### THIXOMAT, INCORPORATED

Dr. Raymond F. Decker, FASM, Dr. Robert D. Carnahan, FASM, Mr. David C. Dawson

### **2002**

For the development and application of new aluminum alloy products with properties and strength weight ratios that make possible the design of future aircraft with improved payload and design safety margins.

### ALCOA INC.

Mr. John W. Collins, III, Dr. William A. Cassada, III

### **2003**

For development and application of injection-moldable plastics with exceptionally high thermal conductivities that enable new applications and opportunities for commercial use of thermoplastics.

### COOL POLYMERS, INC.

Mr. Kevin McCullough, Dr. James D. Miller, Mr. Mikhail Sagal

### **2004**

For development and application of amorphous thin-film hinge materials with superior mechanical and metallurgical properties for digital light processor (DLP) applications.

### TEXAS INSTRUMENTS, INC.

Mr. John Van Scoter, Mr. James Baker

### **2005**

For the development of Oxinium™ Oxidized Zirconium for use as a joint replacement material to improve the performance and increase the service life of total joint replacement systems.

### SMITH & NEPHEW ORTHOPAEDICS

Mr. William L. Griffin



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Dr. Gordon Hunter

### **2006**

For the development and commercialization of low-temperature colossal supersaturation (LTCSS), a novel surface hardening method for the carburization of austenitic stainless steels.”

#### **SWAGELOK COMPANY**

Mr. Carl E. Meece, Dr. Sunniva Collins,  
Mr. Peter Williams

### **2007**

For leadership in the development of Commercial High Superconductor Wire for use in solving key challenges related to the electric power grid and also enabling for major advances in military capability.

#### **AMERICAN SUPERCONDUCTOR CORPORATION**

Dr. Steven Fleshler, Dr. Alexander Otto

### **2008**

For the development and commercialization of the Dow Corning® Active Protection System, a “Smart” Impact Protection Textile with Superior Defense and Comfort.

#### **DOW CORNING CORPORATION**

Christian A. Velasquez

### **2009**

For the development of technology and manufacturing methods for Novel silver based nano-structured anti-microbial and anti-inflammatory coatings with significant and wide ranging clinical and patient benefits.

#### **NUCRYST PHARMACEUTICALS**

Dr. Robert E. Burrell  
University of Alberta



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### **2010**

For the Development of Material for an AOTF (Acousto-Optic Tunable Filter) based Hyperspectral Imager for Homeland Defense Applications

#### **NORTHROP GRUMMAN CORPORATION**

Narsingh Bahadur Singh, Patrick M. Antkowiak, John C. Johnson

### **2011**

For the development of Porous Iron Aluminide for Filtration of Next-Generation Fossil Fuel Generating Facilities and Catalytic Refineries.

#### **PALL CORPORATION**

Dr. Daniel P. Henkel

### **2012**

For the development of crucibles for directional solidification of silicon and allied technologies to make multi-crystalline silicon a reality for photovoltaic applications.

#### **ARC Energy**

Chandra P. Khattak

### **2013**

For the world's first successful implementation of TiAl in aero engines.

#### **GE AVIATION**

Mr. David L. Joyce



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### **2014**

For the development and implementation of lead-free solder assembly processes for server and storage systems.

#### **IBM SYSTEMS AND TECHNOLOGY GROUP**

Ms. Marie Cole

Mr. Matt Kelly

Dr. Jim Wilcox

### **2015**

For the development, transfer, and successful commercialization of a novel platinum-chromium alloy for use in manufacturing the next generation of coronary stents.

#### **NATIONAL ENERGY TECHNOLOGY LABORATORY**

Mr. Paul C. Turner

Mr. Edward R. Argetsinger

Mr. Jeffrey S. Hansen

Dr. Paul D. Jablonski

### **2016**

For development of a big area additive manufacturing (BAAM) technology and the materials that enable the technologies that can produce components ten times larger, one hundred times less expensive, and one hundred faster than previous systems.

#### **OAK RIDGE NATIONAL LABORATORY**

Dr. Vlastimil Kunc

Mr. Randall F. Lind

Dr. Brian K. Post



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### **2017**

For the development of ES302 nanostructured thin film material that significantly increases service life, improves efficiency, and prevents many surface-initiated wear modes when applied to precision mechanical components such as rolling element bearings and gears.

#### **THE TIMKEN COMPANY**

Prof. Gary Doll

Dr. Ryan D. Evans

Mr. James R. Gnagy

Mr. Thomas E. Springer

### **2018**

For the development and commercial production of Cu-Ni-MN high-performance weathering structural steels.

#### **ILLINOIS DEPARTMENT OF TRANSPORTATION**

Mr. Christopher Hahin

#### **NORTHWESTERN UNIVERSITY**

Prof. Semyon Vaynman

### **2019**

For development and commercialization of NiTi alloys for corrosion resistant, high load capacity bearing, gear and mechanical component applications.

#### **NASA GLENN RESEARCH CENTER AND THE ABBOTT BALL COMPANY**

Mr. Craig W. Bond

Dr. Christopher Dellacorte

Dr. Ronald D. Noebe



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### **2020**

The Development and Commercialization of the Cold Spray Helium Automated Recovery and Repair Production System (CS- HARRPS).

**US ARMY RESEARCH LABORATORY, SERVICE ENGINEERING, QUANTUM TECHNOLOGY CORPORATION, VCR METAL SYSTEMS, MOOG, UNITED TECHNOLOGIES RESEARCH CENTER**

Dr. Victor K Champagne, Fr., FASM

Mr. Aaron Nardi

Dr. Dennis Helfritsch

Dr. Ovi Marin

Mr. Rob Hrabe

Mr. Chris Howe

Mr. Lawrence Binek

### **2021**

For the design and commercialization of novel high-performance carburizable steels enabling more durable, lighter weight transmission gears with increased power density.

**QUES TEK INNOVATIONS**

Mr. Jeff Grabowski

Mr. Chris Kern

Dr. Thomas S. Kozmel

Prof. Gregory B. Olson, FASM

Dr. Jason T. Sebastian

Mr. Kerem Taskin.