

CHECKLIST FOR NOMINATION PROCESSING

<p align="center">2009 NOMINATION</p> <p>Individual/Team/Company</p> <p>Nominee(s):</p> <p><i>Zalman M. Shapiro</i></p> <p>Nominator:</p> <p><i>Deborah Shapiro</i></p>	<ul style="list-style-type: none"> <input type="checkbox"/> Nomination received on <i>Fri., May 29, 2009</i> <input type="checkbox"/> Nomination sent via e-mail/fax/airmail/courier <input type="checkbox"/> Contact Info <u>(b)(6)</u> <input type="checkbox"/> Nomination sent by <i>Deborah Shapiro</i> <input type="checkbox"/> Nomination application fully completed? <ul style="list-style-type: none"> o If not, list missing information with follow up date(s) <i>need to resubmit form</i> <i>emailed 6/4</i> <i>need additional rec. contact info in .doc not docx</i> <input checked="" type="checkbox"/> Six letters of support? <ul style="list-style-type: none"> o If not, how many more required? List follow up date(s) <i>14 letters</i> <i>need to rename files after scan</i> <i>15 letters</i> <input checked="" type="checkbox"/> Acknowledgement sent <i>Fri., June 5 2009</i> <input checked="" type="checkbox"/> Print or scan documents into folder <input checked="" type="checkbox"/> File complete <input checked="" type="checkbox"/> Enter information into database <input type="checkbox"/> Burn CD for NMTI NEC members
<p>NOTES</p>	

NATIONAL MEDAL OF TECHNOLOGY AND INNOVATION

2009 Nomination Form

(Nominations must be submitted by COB 5:00 p.m. EST May 29, 2009 to NMTI@uspto.gov)

INSTRUCTIONS: To enter information onto the form, click inside the blank box and begin typing.

I. General Information

NOMINATION FOR INDIVIDUAL

Is this individual a U.S. citizen? (U.S. Citizenship is a requirement.)

Yes No

NAME

TITLE

Zalman M. Shapiro, PhD

Former President and CEO, NUMEC and its subsidiaries and formerly held executive positions at Westinghouse Electric Corp.

Pronunciation

COMPANY / ORGANIZATION

ADDRESS

(b)(6)

CITY

STATE

ZIP CODE

(b)(6)

PHONE

FAX

E-MAIL

(b)(6)

same as phone-must call first to notify

(b)(6)

NOMINATION FOR TEAM (Up to four Individuals)

Are members of this team U.S. citizens? (U.S. Citizenship is a requirement.)

Yes No

NAME #1

TITLE

Pronunciation

COMPANY / ORGANIZATION

ADDRESS

CITY

STATE

ZIP CODE

PHONE

FAX

E-MAIL

NAME #2

TITLE

Pronunciation

COMPANY / ORGANIZATION

ADDRESS

CITY

STATE

ZIP CODE

PHONE	FAX	E-MAIL

NAME #3	TITLE	

<i>Pronunciation</i>	
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COMPANY / ORGANIZATION

ADDRESS

CITY	STATE	ZIP CODE
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PHONE	FAX	E-MAIL

NAME #4	TITLE	

<i>Pronunciation</i>	
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COMPANY / ORGANIZATION

ADDRESS

CITY	STATE	ZIP CODE
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PHONE	FAX	E-MAIL

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NOMINATION FOR COMPANY/ORGANIZATION (OR DIVISION THEREOF)

Is company/organization over 50% owned by U.S. citizens?

Yes No

NAME (Representative)

TITLE

<i>Pronunciation</i>	

COMPANY / ORGANIZATION

<i>Pronunciation</i>	
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ADDRESS

CITY	STATE	ZIP CODE
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PHONE	FAX	E-MAIL

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PAST MEDAL RECIPIENT(S) WITHIN THE COMPANY/ORGANIZATION

NAME(S)

AWARD YEAR

CONTRIBUTION/ACHIEVEMENT

II. Summary of Nominee's Contribution/Achievement

Refer to Areas of Excellence and Nomination Guidelines in the Nomination Instructions section of this Guide as needed.

PROPOSED CITATION FOR CONTRIBUTION/ACHIEVEMENT (Limit 1-2 sentences)

See examples of past Medal citations at www.uspto.gov/nmti.

For his continuous, diverse, and profound contributions to the defense and welfare of the United States, including his pioneering innovations in nuclear-related materials processing and equipment development. For his seminal contributions to our nuclear-powered navy and commercial nuclear power industry, long-lived cardiac pacemakers, and prospective ground-breaking applications of synthesized diamonds.

EXECUTIVE SUMMARY OF CONTRIBUTION/ACHIEVEMENT (Limit 1 page/500 words)

This description should be appropriate for public distribution, should the nominee(s) be selected.

An outstanding innovator, Dr. Shapiro:

Studied exhaustively the iodide vapor deposition process for zirconium and hafnium leading to his unique, successful design of apparatus for large-scale, low-cost production of consistently pure, ductile, corrosion-resistant zirconium and hafnium, suitable for fuel cladding and reactor control, respectively. For this, he was cited by Admiral Rickover as one of four people most responsible for the success of USS Nautilus (first nuclear-powered submarine). His contributions were crucial to the success of the world's first atomic-powered ship, as well as power reactors built subsequently for commercial and naval application.

Directed essential studies of the chemical properties, production and fabrication of uranium dioxide (UO₂), the fuel of choice for water-cooled power reactors.

Conceived and developed the method for, and implemented the design of, the first plant for the continuous production of consistently uniform UO₂ powder capable of being fabricated into the very high density fuel pellets required for nuclear power reactors. This resulted in a precipitous reduction in the cost of production of UO₂ fuel, one of the two critical materials developments enabling nuclear power plants to be economically competitive with those burning fossil fuels.

Established the first commercial plutonium (Pu) laboratory/fuel fabrication facility in the world and initiated the first studies on the fabrication and characterization of uranium/plutonium mixed oxide (UO₂/PuO₂) fuel for power reactors. This pioneering work established the basis for fabricating power reactors utilizing plutonium. Such reactors enable the destruction by "burning" of the copious quantities of plutonium otherwise available for weapons production. This work epitomizes the conversion of "swords into plowshares."

First conceived the idea and methods for coating metallic and ceramic particles uniformly with a variety of materials and consolidating these into composite materials in which the particles are totally contained in a uniform matrix of the coating material. Although first conceived for application in the production of stable, corrosion-resistant zirconium-clad metallic uranium fuel, the ideas and methods proved to be useful and were later adapted for a number of other important nuclear (classified) and commercial applications.

Pioneered in the commercial application of radiation for food preservation and sterilization of medical supplies, as well as the in situ cold polymerization of plastics impregnated in porous materials for a variety of important applications. In this regard, he established Isotope and Radiation Enterprises in partnership with the Israel AEC for commercial implementation of this technology in Israel. NUMEC designed and fabricated an irradiator for the University of Hawaii

Shared responsibility for the conception, design and fabrication of the first successful nuclear powered (Pu238) cardiac pacemaker under the auspices of the US AEC. The materials employed and methods developed for this pacemaker were subsequently adopted in the fabrication of modern lithium battery-powered cardiac pacemakers.

Contributed importantly to the practical design and fabrication of thermoelectric power supplies fueled with radioactive isotopes.

Conceived & patented process for synthesizing gem-quality diamonds at low temperature & atmospheric pressure.

COMPREHENSIVE DESCRIPTION OF CONTRIBUTION/ACHIEVEMENT (Limit 5 pages/2,500 words)

Dr. Zalman Shapiro has made numerous, diverse and profound contributions to the welfare of the United States.

The beneficial impact of these for our defense/security, economy, and environment have been and will continue to be both remarkably far-reaching and enduring. The majority of his career focused on innovations in the nuclear industry and applications and commercialization of nuclear materials products and processes for peaceful uses.

His landmark achievements include innovative work that was instrumental to the success of:

- the first nuclear reactor-powered submarine (Nautilus)
- the first commercial atomic power plant (Shippingport, PA)
- the nuclear power industry as a viable competitor with power derived from fossil-fuels
- the first commercial facility of its kind in the world for processing plutonium for peaceful uses
- the first long-lived, nuclear-powered pacemaker

These innovations and their benefits will be discussed in later sections.

His most recent invention, though seemingly unrelated, easily fits in the continuum of his innovations by virtue of the enormous benefits that each has generated and has the potential to generate. By the very act of receiving his 15th patent, at the age of 89, for a technologically sophisticated method of large-scale, low-cost synthesis of large gem-quality diamonds, Dr. Shapiro demonstrates that marginalizing the elderly does our country and the elderly an enormous and expensive disservice. The valuable social and economic implications, of this alone, at this time in our history, are indeed major. It provides sorely needed inspiration to an already large and quickly growing segment of our population to stay current, motivated to create, maintain optimal health, and be productive. If aging has one plus, it is that wealth of knowledge and experience acquired can give rise to significant technological contributions and accordingly deserves to be valued. This contribution sends a message that encouraging and supporting our senior citizens to continue to innovate benefits our economy by lessening the urgent need for entitlements via increasing awareness and actualization of enormous commercial possibility and revenue generation previously discounted or discouraged.

The invention itself, benefits our economy by substantially reducing importation of cut and uncut diamonds (currently estimated at forty billion dollars annually) and thus benefits our balance-of-trade. Moreover, the cost of current industrial applications will be significantly lower generating appreciable savings outward from the manufacturers to the consumers. And further as history has demonstrated, once the synthesized gem diamond

supply is cheap enough broad and diverse innovation follows.

That gem diamond synthesis is the subject of this innovation is further significant due to diamonds' uniquely desirable and significant hardness, durability, abrasion-resistance, useful electrical and heat conduction properties. Researchers are already looking at potential applications such as artificial joint replacements, applications for water purification and solar energy among others. Dr. Zalman Shapiro's unique process in facilitating mass production and enabling growing larger diamonds leapfrogs over processes that are used presently.

Just as he conceived and developed a process of mass production of nuclear fuel which contributed to the success of nuclear power as a viable source of energy, he has again made a seminal contribution, this time propelling the growth of the diamond synthesis industry and all the untold technologies/industries that will arise as a consequence benefiting our economy and quality of life accordingly.

Dr. Zalman Shapiro was and still is a trailblazer, taking on unknown and daunting challenges in what was a new frontier (nuclear materials/processes) with courage and intelligence. Stuart Hoffman, in his recommendation letter, addresses a number of challenges faced and overcome by Dr. Shapiro taking on the dual role of innovator and entrepreneur.

The focus here, therefore, will be on technological problems, their solutions and resultant benefits to the well-being of the United States.

In 1948, Westinghouse was awarded a contract by the Navy for the design and construction of pressurized water reactors which were to power the first nuclear-propelled submarine, USS Nautilus. Dr. Shapiro had started working for Westinghouse in August of that year shortly after receiving his PhD. After only two months, he had already submitted 6 Patent Disclosures which were accepted and for which he was given awards. As a result of his performance, he was invited to join the Navy project at its inception in February 1949.

The submarine contract called for the design and construction of two reactors; one for the land-based prototype in Idaho and the other for the Nautilus which was to be constructed by General Dynamics in New London, Connecticut. The schedule was extremely tight. The prototype was to be operational in 1953 and its core was to be ready for installation shortly thereafter. Considering that a pressurized water reactor had never been built before, this was a Herculean task.

Early on, it was decided by the project physicists that zirconium, transparent to neutrons, was required to clad the U235 fuel within the fuel elements to protect the uranium from reacting with the high temperature pressurized water in order to assure that fission products would not enter the coolant stream. It was essential that the cladding be transparent to neutrons to enable the chain reaction to be sustained.

Unfortunately, little was known about the metallurgical and chemical properties of zirconium metal. The material made by the sole suppliers in the U.S., though it was supposed to be pure and ductile, was of inconsistent quality. It initially cost about \$1000/pound and could only be produced in, at most, foot-long, pencil-thin rods. When exposed to the high temperature, pressurized water at which the reactor was supposed to operate, it would often react with the water to form zirconium oxide- a white powder.

Panic ensued and Dr. Shapiro was tasked with determining the cause and then developing a process that would produce consistently good material and further to design the equipment to produce commercial quantities economically. By working 12 hour days, 7 days a week, Dr. Shapiro accomplished all the objectives in record time and the actual production facility was completed in only three months.

When the reactor core was assembled and ready for shipment to Idaho, it was discovered that the control rods

were metallurgically faulty. Once again panic ensued and Dr. Shapiro was sought to produce ductile, corrosion-resistant hafnium for the fabrication of the replacement control rods. Hafnium was specified for its ability to absorb neutrons in order to control the power.

The core was shipped with little time delay and tested successfully. For his intense and successful efforts, Admiral Rickover cited Dr. Shapiro as one of the four people most responsible for the success of the Nautilus.

With the launching of the Nautilus in 1954 and its spectacular maiden voyage, the U.S. Navy was revolutionized. Dr. Shapiro had made an enormous and enduring contribution to the defense of our country.

Nuclear propulsion has been widely adopted for its unique benefits and plays an integral part in the strength and success of today's Navy. Approximately 40% of the Navy's combatant ships are nuclear-powered. Nuclear submarines have the advantage of stealth and are able to cruise submerged for extremely long periods often limited only by their food supply. Nuclear propulsion throughout the fleet offers: unparalleled flexibility, energy independence, high-power density, real-time response, generates more than enough electricity to power massive radars and hi-tech weaponry, an environmentally clean source of energy and has spawned new multi-billion-dollar industries providing thousands of jobs.

For just these innovative contributions to the success of the Nautilus and paving the way to our nuclear Navy and much-enhanced defense capabilities, Dr. Zalman Shapiro is worthy of this honor.

However, as the other provided information and letters describe in detail, Dr. Shapiro's has made many other outstanding contributions, the benefits of which go well beyond defense to significantly enhance our economy and welfare. Our country's strong defense ensures the enjoyment of all the other benefits he has contributed to our society.

Dr. Zalman Shapiro is the very embodiment of what President Obama has been advocating to get the US back on its feet, proceed to regain economic leadership, and to remain on the forefront of global technology. Dr. Shapiro is truly a compelling example of what any American can achieve with education, innovation, hard work and perseverance, and at any age. Since the National Medal of Technology and Innovation is awarded by the President, what could be more fitting than President Obama recognizing and thus highlighting my father's lifetime of enduring & significant contributions to the welfare of the United States and in so doing advance his presidential imperatives.

III. Nominee Biographical Information

Is nominee being nominated for the same achievement to the National Medal of Science? Yes No

Has the nominee been a recipient of the National Medal of Science or the National Medal of Technology and Innovation? Yes No

If yes, clearly differentiate the work that distinguishes this nomination from the work that was the basis for the earlier award.

SUMMARY OF AWARDS AND HONORS THE NOMINEE HAS RECEIVED (Limit 1 page/500 words each)

ACADEMIC HONORS:

- Woodyear Scholar, 1938
- Phi Beta Kappa, 1942
- Standard Oil of Indiana Fellow, 1947-48
- Sigma Xi, 1948 (devoted to the promotion of research in science)

PROFESSIONAL:

- The United States of America, Office of Scientific Research and Development:
For work contributing to the successful prosecution of World War II
(Investigated and determined chemical factors contributing to the erosion of high caliber guns and cannons/helped devise means for reducing such erosion, on behalf of the National Defense Research Council)
- Silver W Award of Merit (Westinghouse's highest corporate honor):
In recognition of distinguished service for his intense effort and success in the development of the basic methods and technology for the quantity production of high purity zirconium for the first submarine atomic power plant
- American Nuclear Society, Citation of Merit: for developing and carrying out the basic method used to prepare pure zirconium in quantity
- Fellow of the American Nuclear Society: for outstanding contribution to the advancement of nuclear science and engineering
- Industrial Appreciation Award of Merit: from Vandergrift Chamber of Commerce and Kiski Valley Enterprises- (non-profit organization devoted to the industrial development of the Kiski Valley, where Apollo is located)
- Honorary Fellow: Technion Israel Institute of Technology
- Johns Hopkins: The Distinguished Alumnus Award, 2002

PATENTS AND PUBLICATIONS

Patents:

2,637,297 1953 Apparatus for Attaching Filaments to Electrodes in Machines for Coating with Metal Vapors
2,637,298 1953 Apparatus for Attaching Filaments to Electrodes in Machines for Coating with Metal Vapors
2,717,915 1955 Apparatus for Production of Purified Metals
2,739,566 1956 (Co-Inventor) Apparatus for Production of Coating of Purified Metals
3,001,877 1961 Method for Aging Liquids
3,339,077 1967 Power Generating Apparatus Including a Thermally Actuable Prime Mover
3,366,865 1968 Power Generating Apparatus Including a Thermally Prime Mover
3,429,295 1969 Apparatus for Producing Vapor Coated Particles
3,609,842 1971 Temperature and Stress Resistant Body and Method for Making Such Body
3,762,026 1973 Method of Making of High Temperature Body of Uniform Porosity
3,822,151 1974 (Co-Inventor) Thermoelectric Generator with Radioactive Material Heat Source
3,961,909 1976 Uniformly Porous Body
3,989,546 1976 (Co-Inventor) Thermoelectric Generator with Hinged Assembly for Fins
3,989,547 1976 (Co-Inventor) Thermoelectric Generator Having a Resiliently Mounted Removable Thermoelectric Module

Allowance 2009 System and Method for Diamond Deposition Using a Liquid-Solvent Carbon-Transfer Mechanism

Number of foreign patents corresponding to US Patents: including UK, France, Belgium, Italy, Canada

Publications:

R.C. Evans, F.H. Horn, Z.M. Shapiro, & R.L. Wagner: "The Chemical Erosion of Steel by Hot Gases under Pressure," *Journal of Physical and Colloid Chemistry*, Vol. 51, No.6, November, 1947.

Chapter V: Iodide Decomposition Process, *The Metallurgy of Zirconium*, edited by Lustman and Kerze (McGraw-Hill, 1955)

Co-Author, Section on Nuclear Power. *Mark's Standard Handbook for Mechanical Engineers* (McGraw-Hill, 1967)

Naval Reactor Program, Contract AT-11-1-GEN-14, Report WAPD-TD-35, 1951

Naval Reactor Program, Contract AT-11-1-GEN-14, Report WAPD-TD-47, 1952.

Report TID-5061, Vol. 1. pp. 177-195, 1952

Report TID-5084, Vol. 1. pp. 95-111, 1952

Report WAPD-80, April 3, 1953

H.R. Hoge & Z.M. Shapiro, Naval Reactor Program, Contract AT-II-I-GEN-14 Report WAPD- TD-51, March 20, 1952

H.R. Hoge & Z.M. Shapiro, Report TID-50R4, Vol. 11, pp 79-94, 1952

H.R. Hoge & Z.M. Shapiro, Naval Reactor Program, Contract AT-11-1-GEN-14, Report WAPD-RM-35, June 20, 1951

Numerous Classified Reports

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FOR INDIVIDUALS OR TEAMS: EMPLOYMENT HISTORY (No more than 10 years required)

- 1948 Senior Engineer, Westinghouse Research Laboratory
- 1949-1957 Transferred to the AEC Bettis Naval Nuclear Power Laboratory (operated by Westinghouse) at its inception
Successively: Senior Engineer; Manager, Physical Chemistry; Manager, Chemical Metallurgy; and Assistant Division Manager, Pressurized Water Reactor Division.
- 1957-1970 Founder, President and CEO, Nuclear Materials and Equipment Corp. (NUMEC)
Apollo, PA
Founder/CEO Nuclear Decontamination Corp. (NUDEC)
Founder/CEO (with a French Company - SAIP) NUMEC Instruments and Controls Corp. (NUMINCO)
Founder/CEO (w/ Government of Israel, which owned 50%) Isotope and Radiation Enterprises, Ltd. (ISORAD)
Selected by the U.S. AEC for operation (& CEO) of the Boron-10 Separation Plant, Model City, NY
- 1967 NUMEC purchased by Atlantic Richfield Co.
Elected Vice President ARCO Chemical Co., and Director, ARCO Hanford Co.
- 1971 Executive Assistant to the Vice President, Breeder Reactor Divisions, Westinghouse Electric Corp.
- 1978-1981 Manager, Fusion Power Systems, Westinghouse Electric Corp.
- 1981-1983 Director, Special Projects, Nuclear Energy Systems Westinghouse Electric Corp.
- 1984-2000 President, International Technology and Business Services Corp. and Associated Technology and Business Consultants

FOR TEAMS: EXPLAIN THE RELATIONSHIP AMONG TEAM MEMBERS

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FOR COMPANIES/ORGANIZATIONS: PLEASE PROVIDE INSTITUTIONAL HISTORY

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IV. Nominator Information

Self-nominations are accepted.

For individual or team, if this is a self-nomination, check this box and proceed to Section V.

For nomination of a company/organization, complete the information below before proceeding to Section V.

NOMINATOR'S RELATIONSHIP TO NOMINEE AND CONTRIBUTION

Daughter of nominee, knowledge of his lifetime achievements and their profound benefits to the defense and welfare of the United States

NOMINATOR'S NAME	TITLE
Deborah Shapiro	President

COMPANY/ORGANIZATION

dba: Deborah Shapiro

ADDRESS

(b)(6)

CITY	STATE	ZIP CODE
(b)(6)		

PHONE	FAX	E-MAIL
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(b)(6)	same as phone-must call first to notify	(b)(6)
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V. Recommendations

- The nomination must include at least six letters of recommendation or support from individuals who have first-hand knowledge of the cited achievement(s). It is preferred that the letters of recommendation be included with the electronic nomination file in a Microsoft Word (.doc) or as a PDF file. Please label each letter with last name of nominee, underscore, first name, underscore, the word "rec" and last name of person writing support letter.doc.

For example: Doe_John_recSmith.doc.

- Contact information for those sending letters of recommendation should be included in the nomination form under Section V. A confirmation acknowledging receipt will be sent to those sending recommendation letters.
- Alternatively, letters of recommendation may be sent by e-mail to NMTI@uspto.gov, fax to (571) 270-9100, or overnight delivery to the National Medal of Technology and Innovation, c/o United States Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. Applicants who do not have Internet access should contact Jennifer Lo, Program Manager, at (571) 272-8600. **Letters of recommendation must arrive by close of business (5:00 p.m. EST), May 29, 2009.**

Please complete contact information for letters of recommendation or support. A confirmation will be sent to those sending recommendation letters.

RECOMMENDATION #1

NAME	TITLE	
John T. Conway	The Honorable Chairman Emeritus, Defense Nuclear Facilities Safety Board, former Staff Director Joint Committee on Atomic Energy of the US Congress	
COMPANY/ORGANIZATION		
The Defense Nuclear Facilities Safety Board is an independent federal agency established by Congress in 1988. The Board's mandate under the atomic Energy act is to provide safety oversight of the nuclear weapons complex operated by the Department of Energy (DOE).		
ADDRESS		
(b)(6)		
CITY	STATE	ZIP CODE
(b)(6)		(b)(6)
PHONE	E-MAIL	
(b)(6)	(b)(6)	
AFFILIATION WITH NOMINEE		
Professional oversight of US Naval Reactor Program and US contractors in nuclear field- i.e. Bettis, NUMEC		

RECOMMENDATION #2

NAME	TITLE
Oscar S.Gray	Jacob A. France Professor Emeritus of Torts, former: member of the Department of State, Director of the Office of Environmental Impact (Office of the Secretary of Transportation), Vice President, NUMEC
COMPANY/ORGANIZATION	

University of Maryland School of Law		
ADDRESS		
500 West Baltimore St.		
CITY	STATE	ZIP CODE
Baltimore	MD	21201-1786
PHONE	E-MAIL	
(b)(6)		
AFFILIATION WITH NOMINEE		
Worked with him from its 1957 inception, as Secretary/Treasurer and then Vice President, of NUMEC,		

RECOMMENDATION #3

NAME	TITLE	
Francis P. Cotter	Vice-President of Government Affairs, retired	
COMPANY/ORGANIZATION		
Westinghouse Electric Corp.		
ADDRESS		
(b)(6)		
CITY	STATE	ZIP CODE
(b)(6)		
PHONE	E-MAIL	
(b)(6)		
AFFILIATION WITH NOMINEE		
Professional interface at Bettis Naval Nuclear Power Laboratory (operated by Westinghouse) and then post 1971-1983 at Westinghouse Electric Corp.		

RECOMMENDATION #4

NAME	TITLE	
Victor Parsonnet, M.D.	Cardiovascular Surgeon, Director of the Pacemaker and Defibrillator Center Past Director of Surgery	
COMPANY/ORGANIZATION		
Newark Beth Israel Medical Center /Saint Barnabas Health Care System		
ADDRESS		
201 Lyons Avenue		
CITY	STATE	ZIP CODE
Newark	NJ	07112
PHONE	E-MAIL	
(b)(6)	(b)(6)	
AFFILIATION WITH NOMINEE		
First-hand knowledge of NUMEC nuclear -powered pacemakers, from inception and then from actual experience as a cardiovascular surgeon implanting them in patients and subsequent long-term following-up of said patients		

RECOMMENDATION #5

NAME	TITLE
Bernard L. Cohen	Professor Emeritus, Department of Physics and of Astronomy and of Environmental and Occupational Health

COMPANY/ORGANIZATION

University of Pittsburgh

ADDRESS100 Allen Hall
3941 O'Hara St.**CITY**

Pittsburgh

STATE

PA

ZIP CODE

15260

PHONE

(b)(6)

E-MAIL**AFFILIATION WITH NOMINEE**

Known socially and familiar with his work

RECOMMENDATION #6**NAME**

Kirsten E. Gillibrand

TITLE

United States Senator

COMPANY/ORGANIZATION

State of New York

ADDRESSRussell Senate Office Building
Suite 478**CITY**

Washington, DC

STATE**ZIP CODE**

20510-3205

PHONE

(b)(6)

E-MAIL**AFFILIATION WITH NOMINEE**

Knowledge of his contributions and benefits

RECOMMENDATION #7**NAME**

Stuart G. Hoffman

TITLE

Senior Vice President and Chief Economist

COMPANY/ORGANIZATION

PNC Financial Services Group

ADDRESSOne PNC Plaza
249 Fifth Avenue**CITY**

Pittsburgh

STATE

PA

ZIP CODE

15222-2707

PHONE

(b)(6)

E-MAIL**AFFILIATION WITH NOMINEE**

Known through joint service in community organizations

RECOMMENDATION #8

NAME

TITLE

Charles A. Lemaire

Registered Patent Attorney and President of the
Lemaire Patent Law Firm

COMPANY/ORGANIZATION

Lemaire Patent Law Firm

ADDRESS

14565 Grand Avenue

CITY

STATE

ZIP CODE

Burnsville

MN

55306

PHONE

E-MAIL

(b)(6)

AFFILIATION WITH NOMINEE

Served as his patent attorney on his soon to be issued 15th patent

For additional letters of recommendation, please provide the above requested information on a Word document and submit it with this application.

Compliance with Program Terms

I, THE NOMINATOR(S),

Deborah Shapiro

OF THE FOLLOWING NOMINEE

Zalman M. Shapiro, PhD

for a National Medal of Technology and Innovation award, by my submission of this nomination do hereby consent to public disclosure of the information contained in this package for the purpose of use or distribution by the Department of Commerce to develop descriptive material, such as magazine articles, Web sites or other means, to increase public awareness of National Medal of Technology and Innovation Laureates and their accomplishments. I do **NOT** consent to public disclosure of any information deemed personal, as noted below:

The Department of Commerce requests that recipients of the National Medal of Technology and Innovation work with its agencies and the National Science and Technology Medals Foundation to share additional information about "lessons learned" regarding U.S. commercial process and competitiveness.

The public reporting burden for the collection of this information is estimated to average 40 hours per response, including the time for reviewing instructions, collecting information, and completing the form. All responses to this request for information are voluntary for purposes of the Paperwork Reduction Act. Please mark clearly any portion of the information submitted that you consider to be proprietary and it will be afforded confidentiality to the extent allowed under the Freedom of Information Act. Notwithstanding any other provision of law, no person is required to respond to, nor shall a person be subject to a penalty for failure to comply with, a collection of information subject to the requirements of the Paperwork Reduction Act unless that collection of information displays a current valid OMB control number. Comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, can be sent to the National Medal of Technology and Innovation, c/o United States Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450 (NMTI@uspto.gov).

ADDITIONAL CONTACT INFORMATION FOR LETTERS OF RECOMMENDATION OR SUPPORT

For the Nomination of Dr. Zalman Shapiro

RECOMMENDATION #9

NAME: MARK K. LESKY

TITLE: Director, Responsible Care (EHS)

COMPANY/ORGANIZATION: NOVA Chemicals

ADDRESS: 25 Rosemont Lane

CITY: Pittsburgh

STATE: PA

ZIP CODE: 15217

PHONE: (b)(6)
EMAIL:

AFFILIATION WITH NOMINEE: Known socially, aware of his work and contributions

RECOMMENDATION #10

NAME: Jerome L. Rosenberg

TITLE: Research Integrity Officer (since 1992)

Former Chairman of the Department of Biophysics and Microbiology, Dean of the Faculty of Arts and Sciences, Vice Provost, and Chairman of the Department of Biological Sciences and Professor Emeritus of Chemistry and Biological Sciences

COMPANY/ORGANIZATION: University of Pittsburgh

ADDRESS: 1710 Cathedral of Learning

CITY: Pittsburgh

STATE: PA

ZIP CODE: 15260

PHONE: (b)(6)
EMAIL:

AFFILIATION WITH NOMINEE: Known socially and aware of his work and contributions

RECOMMENDATION #11

NAME: Peter D. Trooboff

TITLE: Partner in his law firm / Attorney

COMPANY/ORGANIZATION: Covington & Burling LLP

ADDRESS: 1201 Pennsylvania Avenue, NW

CITY: Washington, DC

STATE:

ZIP CODE: 20004-2401

PHONE: (b)(6)

EMAIL:

AFFILIATION WITH NOMINEE: Known socially but aware of achievements and contributions

RECOMMENDATION #12

NAME: Aram Schefrin

TITLE: Partner, Attorney

COMPANY/ORGANIZATION: Lovett Schefrin Harnett

ADDRESS:

CITY:

STATE

ZIP CODE:

PHONE:

EMAIL:

AFFILIATION WITH NOMINEE: Relative, knowledge of him, his achievements and contributions

RECOMMENDATION #13

NAME: Seth Corey, MD, MPH

TITLE: Sharon Murphy-Steven Rosen Professor of Cancer Biology and Chemotherapy

Division of Pediatric Hematology-Oncology and Stem Cell Transplant

COMPANY/ORGANIZATION: Northwestern University, Feinberg School of Medicine

ADDRESS: Department of Pediatrics, Suite 5-107

303 East Superior Street

CITY: Chicago

STATE: IL

ZIP CODE: 60611

PHONE: (b)(6)

EMAIL:

AFFILIATION WITH NOMINEE: Known socially and aware of achievements and contributions

RECOMMENDATION #14

NAME: Grace Ann Geibel, RSM, PhD

TITLE: President Emeritus

COMPANY/ORGANIZATION: Carlow University

ADDRESS: 4295 Greensburg Pike, Suite 2402

CITY: Pittsburgh

STATE: PA

ZIP CODE: 15221

PHONE: (b)(6)

EMAIL:

AFFILIATION WITH NOMINEE: Known socially and aware of his contributions

RECOMMENDATION #15

NAME: James C. Roddey

TITLE: Senior Consultant, former Allegheny County Chief Executive, 2000-2004,

Former Partner/ President/Director of a number of prestigious companies, outstanding positions in public service (information available upon request)

COMPANY/ORGANIZATION: McCrory, McDowell LLC

ADDRESS: One Riverfront Center, 20 Stanwix Street

CITY: Pittsburgh

STATE: PA

ZIP CODE: 15222

PHONE: (b)(6)

EMAIL:

AFFILIATION WITH NOMINEE: Known through organizational work and aware of his contributions

(b)(6)

ADDITIONAL CONTACT INFORMATION FOR LETTERS OF RECOMMENDATION OR SUPPORT

For the Nomination of Dr. Zalman Shapiro

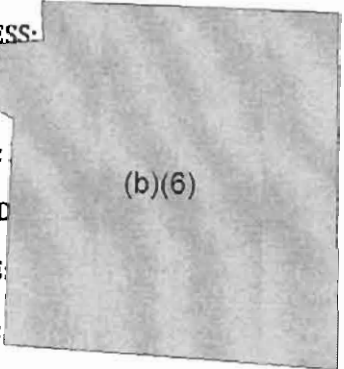
RECOMMENDATION #9

NAME: MARK K. LESKY

TITLE: Director, Responsible Care (EHS)

COMPANY/ORGANIZATION: NOVA Chemicals

ADDRESS:
CITY:
STATE:
ZIP COD
PHONE:
EMAIL:



AFFILIATION WITH NOMINEE: Known socially, aware of his work and contributions

RECOMMENDATION #10

NAME: Jerome L. Rosenberg

TITLE: Research Integrity Officer (since 1992)

Former Chairman of the Department of Biophysics and Microbiology, Dean of the Faculty of Arts and Sciences, Vice Provost, and Chairman of the Department of Biological Sciences and Professor Emeritus of Chemistry and Biological Sciences

COMPANY/ORGANIZATION: University of Pittsburgh

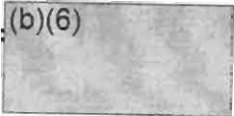
ADDRESS: 1710 Cathedral of Learning

CITY: Pittsburgh

STATE: PA

ZIP CODE: 15260

PHONE:
EMAIL:



AFFILIATION WITH NOMINEE: Known socially and aware of his work and contributions

RECOMMENDATION #11

NAME: Peter D. Trooboff

TITLE: Partner in his law firm / Attorney

COMPANY/ORGANIZATION: Covington & Burling LLP

ADDRESS: 1201 Pennsylvania Avenue, NW

CITY: Washington, DC

STATE:

ZIP CODE: 20004-2401

PHONE: (b)(6)
EMAIL: [Redacted]

AFFILIATION WITH NOMINEE: Known socially but aware of achievements and contributions

RECOMMENDATION #12

NAME: Aram Schefrin

TITLE: Partner, Attorney

COMPANY/ORGANIZATION: Lovett Schefrin Harnett

ADDRESS: [Redacted]
CITY: [Redacted]
STATE: [Redacted]
ZIP CODE: (b)(6)
PHONE: [Redacted]
EMAIL: [Redacted]

AFFILIATION WITH NOMINEE: Relative, knowledge of him, his achievements and contributions

RECOMMENDATION #13

NAME: Seth Corey, MD, MPH

TITLE: Sharon Murphy-Steven Rosen Professor of Cancer Biology and Chemotherapy

Division of Pediatric Hematology-Oncology and Stem Cell Transplant

COMPANY/ORGANIZATION: Northwestern University, Feinberg School of Medicine

ADDRESS: Department of Pediatrics, Suite 5-107

303 East Superior Street

CITY: Chicago

STATE: IL

ZIP CODE: 60611

PHONE: (b)(6)
EMAIL:

AFFILIATION WITH NOMINEE: Known socially and aware of achievements and contributions

RECOMMENDATION #14

NAME: James C. Roddey

TITLE: Senior Consultant, former Allegheny County Chief Executive, 2000-2004,

former Partner/ President/Director of a number of prestigious companies, outstanding positions in public service (information available upon request)

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EMAIL: