Press Information

Cahn, currently working with NIST and U. of Wash., will receive prize

Materials Scientist John W. Cahn to Receive 27th Annual Kyoto Prize for Lifetime Achievement in "Advanced Technology"

Kyoto/Neuss, 24. June 2011 – The non-profit Inamori Foundation *(President: Dr. Kazuo Inamori)* today announced that **Dr. John W. Cahn** will receive its 27th annual Kyoto Prize in Advanced Technology, which for this year focuses on *Materials Science and Engineering*. Dr. Cahn, 83, will receive the award for his outstanding contributions to alloy materials engineering through his establishment of the theory of spinodal decomposition. He currently serves as emeritus senior fellow at the National Institute of Standards and Technology, and as an affiliate professor at University of Washington.

The Works of Dr. John Cahn

Modern technology is often limited by materials. In renewable energy, computing, robotics, medicine, transportation, and countless other fields, a more capable material is often the missing piece separating today's research from tomorrow's breakthrough. This challenge is often addressed by combining one element with another to yield an alloy material with superior structural or functional properties.

As a young researcher in the 1950s, Dr. Cahn was frustrated by the failures of prevailing theory to support a more systematic approach to materials development. At that time, researchers attempting to maximize the potential of alloy materials were forced to take a trial-and-error approach. Dr. Cahn collaborated with Dr. John Hilliard, a colleague at General Electric, in developing a method to describe

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the process of phase separation. Since its publication in 1961, the Cahn-Hilliard equation has played a key role in materials science and engineering, explaining phenomena as simple as the formation of frost patterns on a car's windshield — and as complex as the clumping of galaxies in the early universe.

Dr. Cahn subsequently established his theory of three-dimensional spinodal decomposition by extending the one-dimensional theory formulated by Dr. Mats Hillert in 1961. In addition to expanding Hillert's theoretical treatment into three dimensions, he incorporated an elastic strain-energy term, allowing alloy materials to be engineered for highly specific structural and functional characteristics. This theory has since found universal application in the design and production of better-performing metals, glass, semiconductors, polymers, and thermal materials requiring unique properties — including extreme strength, thermal conductivity, pore permeability, heat resistance, and magnetism. Dr. Cahn's research findings have also laid the foundation for the phase-field method, one of the hottest research topics of recent years in the materials sciences. Taken as a whole, his work has spawned productive lines of research not only in metallurgy but also in physics, mathematics, chemistry, engineering, economics and demography.

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Other 2011 Kyoto Prize Laureates

In addition to Dr. Cahn, the 2011 Kyoto Prize laureates include:

- In "Basic Sciences:" **Dr. Rashid Sunyaev** (citizenship: Russian and German), 68, an astrophysicist who proposed the theory that fluctuations in cosmic microwave background radiation (CMBR) may be used to explore the expanding universe. Dr. Sunyaev is a visiting professor at the Institute for Advanced Study in Princeton, New Jersey; chief scientist at the Space Research Institute, Russian Academy of Sciences; and director of the Max Planck Institute for Astrophysics.

- In "Arts and Philosophy:" **Mr. Tamasaburo Bando** (citizenship: Japanese), 61, an international theater performer and *tate oyama,* or leading Kabuki actor specializing in female roles. Tamasaburo is known as a creator of elegant beauty whose artistry crosses many genres of the performing arts.

About the Inamori Foundation and the Kyoto Prize

The Kyoto Prize, Japan's highest private award for global achievement, honors significant contributions to the betterment of society. Each Kyoto Prize laureate will be presented with a diploma, a 20-karat-gold Kyoto Prize medal, and a cash gift totaling 50 million yen (approximately US$625,000) during a week of ceremonies beginning November 9, 2011, in Kyoto. The laureates will reconvene in San Diego, Calif., March 20-22, 2012, for the eleventh annual Kyoto Prize Symposium.

The non-profit Inamori Foundation was established in 1984 by Dr. Kazuo Inamori, founder and chairman emeritus of Kyocera and KDDI Corporation. The Kyoto Prize was founded in 1985, in line with Dr. Inamori's belief that a human being has no higher calling than to strive for the greater good of society, and that the future of humanity can be assured only when there is a balance between our

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scientific progress and our spiritual depth. The laureates are selected through a strict and impartial process considering candidates recommended from around the world. As of the 26th Kyoto Prize ceremony (November 10, 2010), the Kyoto Prize has been awarded to 84 individuals and one foundation — collectively representing 15 nations. Individual laureates range from scientists, engineers and researchers to philosophers, painters, architects, sculptors, musicians and film directors. The United States has produced the most recipients (34), followed by Japan (14), the United Kingdom (12), and France (8).

About Kyocera

Headquartered in Kyoto, Japan, Kyocera Corporation is one of the world's leading manufacturers of fine ceramic components for the technology industry. The strategically important divisions in the Kyocera Group, which is comprised of 208 subsidiaries (as of March 31, 2011), are information and communications technologies, products which increase quality of life, and environmentally friendly products. The technology group is also one of the largest producers of solar energy systems worldwide.

With a global workforce of about 66.000 employees, Kyocera posted net sales of approximately €10.74 billion in fiscal year 2010/2011. The products marketed by the company in Europe include laser printers, digital copying systems, microelectronic components, fineceramic products and complete solar power systems. The Kyocera Group has two independent companies in the Federal Republic of Germany: Kyocera Fineceramics GmbH in Neuss and Esslingen and Kyocera Mita Deutschland GmbH in Meerbusch.

The company also takes an active interest in cultural affairs. The Kyoto Prize, a prominent international award, is presented each year by the Inamori Foundation — established by Kyocera founder Dr. Kazuo Inamori — to individuals and groups worldwide who have contributed significantly to the scientific, cultural, and spiritual betterment of humankind (converted at present €430.000 per prize category).

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