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Professor Narayan Wins NCSU Holladay Medal

FOR IMMEDIATE RELEASE

Professor Jagdish (Jay) Narayan, Life Member and Fellow of TMS and Inaugural MRS Fellow, has received 2011-2012 Alexander Quarles Holladay Medal for Excellence. The Holladay medal, named after the first NCSU Chancellor, is the highest honor bestowed by the Board of Trustees of North Carolina State University on a faculty in recognition of his or her outstanding accomplishments in research, teaching and other professional services. He is the only recipient this year. Professor Narayan also received earlier 2011 Reynolds Prize, which recognized sustained excellence in research, teaching and extension by the College of Engineering, and the winner received a cash prize of $25,000, endowed by The R. J. Reynolds Industries, Inc.

Holladay Medal Ceremony on May 2, 2012: (L-R) Provost Warwick Arden, Chancellor Randy Woodson, Professor Jay Narayan (2012 Holladay Medal Winner), Board Of Trustee Chair Barbara Mulkey, Former Chancellor Larry Monteith

Professor Narayan is the John Fan Family Distinguished Chair Professor in the Department of Materials Science and Engineering, and also has appointment as Distinguished Visiting
Scientist at Oak Ridge National Laboratory. After graduating with distinction and first rank from India’s top institution (IIT, Kanpur) in 1969, Narayan continued his studies at the University of California, Berkeley, and obtained his MS (1970) and PhD (1971) degrees in a record time of two years. He worked as Research Metallurgist at Lawrence Berkeley National Laboratory (1971-72) and Senior Scientist and Group Leader at Oak Ridge National Lab (1972-84), before joining North Carolina State University in 1984 as senior professor and Director of Microelectronics Center of North Carolina. He also served as Director of Division of Materials Research (1990-92) of the National Science Foundation.

Professor Narayan was cited for his pioneering research in novel materials and groundbreaking contributions in materials science, mentoring a large number of highly successful graduate students and postdocs, and service to the science and engineering community through professional societies and the National Science Foundation. He has made pioneering contributions in fundamentals of thin film epitaxy across the misfit scale through the paradigm of domain matching epitaxy, novel thin film heterostructures integrated with silicon, three-dimensional epitaxial self-assembled structures, quantum-well nanostructuring leading to Nano-Pocket LED structures, fundamentals of ion-solid and laser-solid interactions, laser annealing, rapid thermal processing, pulsed laser deposition, and formation of novel supersaturated semiconductor alloys and nanostructured materials for next-generation devices and systems. His research on self-assembly of three dimensional nanostructures was hailed as Breakthroughs of the Year by NSF in 2004. Professor Narayan’s discoveries in nanotechnology have made a dramatic impact on energy and environment by improving fuel efficiency and reducing exhaust pollution through nano-oil and nano-fuel additives in combustion engines of automobiles, trucks, trains and planes. His recent patents on integration of different functionalities on a computer chip are revolutionizing high-power devices, solid-state lighting, satellite communications, smart sensor and display devices.

Narayan pioneered the concept of solute trapping in semiconductors by his discoveries of laser annealing in the late seventies and the formation of supersaturated semiconductor alloys for which he received 1981 US DOE Award and 1983 IR-100 on Supersaturated Semiconductor Alloys that form the backbone of modern Integrated Circuits. Narayan received the 2011 Acta Materialia Gold Medal for these pioneering contributions and his leadership in materials science worldwide. The concept of solute trapping, which was introduced by John Cahn, a professor at MIT, in the early seventies, resulted in the 2011 Kyoto Prize for Cahn and the 2011 Nobel Prize for Dan Shechtman for his work on quasicrystals which formed due to solute trapping in aluminum-manganese alloys.

Professor Narayan has developed seven graduate courses over his 28 years of tenure at NCSU, two of which he teaches on Engineering Online for students at NCSU and outside in industry. These courses are very popular among practicing engineers in industry to update their skills and finish their advanced degrees online. He has graduated over 15 MS and 60 PhD students and mentored over 40 Postdocs, who are employed in leading universities, national labs and industry. Many of these students have received top honors such as NSF CAREER Awards; IBM Faculty Awards; MRS, ASM, APS and AAAS Fellow honors and other research and academic awards; and Best Paper Awards. One of Narayan’s students (Associate Professor at Texas A&M)
received Presidential PECASE Award last year, only one in the field of advanced materials in the whole country. Professor Narayan has published over 500 papers in archival journals and received 35 patents which have over 12,800 citations and h-index of 55 so far.

Professor Narayan’s other honors include: 2011 Acta Materialia Gold Medal and Prize, 2011 Lee Hsun Lecture Award from the Chinese Academy of Sciences, 2011 MRS Forum and 2011 MS&T International Conference in Narayan’s honor, ASM Gold Medal, Edward DeMille Campbell Lecture and Prize, three IR-100 Awards, IIT/K Distinguished Alumnus Award, Inaugural MRS Fellow, Life Member and Fellow of TMS, Life Member and Fellow of APS, ASM Fellow, AAAS Fellow, Honorary Member MRS-I, Fellow Bohmische Physical Society, and Life Member and Fellow of National Academy of Sciences (India). North Carolina State University is the largest campus in the UNC System with over 35,000 students and over 9,000 faculty and staff. The College of Engineering at NCSU, one of the largest in the Country, has over 8,800 undergraduate and graduate students with over 900 faculty and staff in 9 academic departments, 11 administrative offices and over 20 state-of-the art laboratories, institutes and research centers.

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