

## **Orlando Auciello**

Argonne National Laboratory, Materials Science Division, Argonne, IL

### **Biography**

**Current Position:** Orlando Auciello is a Senior Scientist in the Division of Materials Science at Argonne National Laboratory (ANL), and an Adjunct Professor in the Department of Materials Science of North Carolina State University (NCSU) and the Physics Department of the University of Illinois-Chicago.

**Education:** Auciello earned his MS (1973) and PhD (1976) degrees in Physics from the Physics Institute "Dr. Balseiro" (National University of Cuyo and Atomic Energy Commission, Argentina) with a thesis on basic physics of ion interaction with solids. After graduation, Auciello held a postdoctoral position (1977-1979) in the Department of Materials Science at McMaster University (Hamilton-Canada) working on ion-interaction with solids.

**Professional Positions with Expertise:** Auciello was a Research Scientist in the Institute for Aerospace Studies at the University of Toronto-Canada (1979-1984) working on plasma-surface interaction for fusion energy. Then he was associate professor at North Carolina State University (1985 –1988) working on the physics and chemistry of plasma, ion-beam, and laser interaction with solids and their application to processing of materials (bulk and thin films). Then he was ca Staff Scientist at the Microelectronics Center of North Carolina (MCNC), from 1988 to 1996, while remaining an Adjunct Professor at NCSU. His work at MCNC and NCSU contributed extensively to the science and technology of multicomponent oxide thin films (HTSC, ferroelectric, and electro-optic materials among others). He helped develop materials integration strategies that are currently being implemented in ferroelectric memories and MEMS devices. Auciello moved to a Senior Scientist position at ANL in 1996 to continue his work on multicomponent oxide thin films, while developing a new field of expertise on the science of nanocarbons and biomolecular/inorganic interfaces.

**Professional Activities:** Auciello is a member of several scientific societies, an author or co-author in about 400 publications, and a co-author in six patents on different subjects, from electrodes for non-volatile ferroelectric memories (NVFRAMs) to field emission cathodes for flat panel displays and other devices. He is an editor or co-editor of nine books on the science and technology of ion, plasma, and laser interaction with solids and the science and technology of thin films. He is co-editor of the book series *Plasma-Materials Interaction* and *Science and Technology of Oxide Thin Films* (new) published by Academic Press. He has been a guest scientist in several institutions, including Princeton Plasma Physics Laboratory (USA), University of Wuppertal (Germany), University of Salford (England), and University of Alicante (Spain). He has organized, chaired, and presented invited and plenary talks in numerous national and international conferences, including MRS Symposia, as well as having directed and lectured at North Atlantic Treaty Organization schools. He is the co-recipient of the 1994 Bunshah Award (American Vacuum Society) for work on *in situ*, real-time characterization of film growth processes, a recipient of a 1998 special recognition from MRS for his contribution as one of the first three MRS Bulletin organizers, and a recipient of the 2000 Integrated Ferroelectric Award for outstanding contributions to the field of ferroelectric thin films. He is also the recipient of :

**2003 Hispanic Engineering Award**, for outstanding technical accomplishments in the general field of science and technology of thin films

**R&D 100 Award:** The 2003 R&D 100 Award provides a mark of excellence known to industry, government, and academia as proof that the UNCD/IPLAS technology developed by O. Auciello, J.A. Carlisle, D. M. Gruen, Ralf Spitzel, and Hildegard Sung-Spitzel is one of the 100 most innovative ideas of the year.

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