

MacChesney, Zanotto selected for 2012 GOMD awards

Veteran glass researchers John B. MacChesney and Edgar D. Zanotto have been named the winners of ACerS Glass & Optical Materials Division's S. Donald Stookey and George M. Morey awards, respectively.

Edgar Dutra Zanotto is a professor of materials science and engineering and directs the Vitreous Materials Laboratory (LaMaV) of the Federal University of São Carlos (UFSCar) in Brazil.

Zanotto has focused his career work on crystallization kinetics and properties of glasses and glass-ceramics. His research has encompassed the development of new glasses and rigorous tests, improvement or development of nucleation and growth models for glasses, the effects of liquid-phase separation on nucleation, surface crystallization kinetics, overall crystallization, glass stability, glass forming ability, the correlation between molecular structure and nucleation mechanism, sintering with simultaneous crystallization, diffusion processes controlling crystallization, as well as mechanical, rheological and thermal properties of glasses and glass-ceramics. The Scopus database indicates that he ranks first with the keywords “crystal nucleation growth glass” among the world’s most productive researchers in this field.

Zanotto says he also is interested in the development of new glass-ceramics with improved and new functionalities. He holds 12 registered patents, two of which have been awarded prizes by IBM, and the 1996 “State Governor Prize — Brazilian Invention.”

A prolific author, Zanotto has published about 150 original and review papers in addition to approximately 50 papers in conference proceedings, 15 book chapters and two books. In 2010, he authored one of the Bulletin’s most popular articles, “A Bright Future for Glass–Ceramics,” in which he provided a thorough overview of the history, applications and challenges of glass– ceramic materials.

An active mentor and advisor, Zanotto has assisted with more than 50 MSc, PhD and postdoctoral research projects. He has participated in about 80 scientific initiation projects. He is a member of four science academies: World Academy of Ceramics; Academy of Sciences of the Developing World; Brazilian Academy of Sciences; and São Paulo State Academy of Sciences. He also is a Fellow of the Society of Glass Technology (UK).

Zanotto has chaired five international glass congresses, and he says he has delivered about 90 invited talks at national and international scientific conferences, plus about 50 invited seminars at universities and industries. He has received 25 awards, including the Brazilian Order of Scientific Merit (Comendador) and the TWAS Engineering Prize.

The GOMD's Morey Award is not Zanotto's first for his work in the glass field. The Journal of Non-Crystalline Solids presented him with the Zachariassen Award in 1990 and the International Commission on Glass gave him the Professor Vittorio Gottardi Memorial Prize in 1993. Zanotto is now an editor of the JNCS and member of the international advisory boards of Materials Research (former editor), ACerS's International Journal of Applied Glass Science, Boletín de la Sociedad Española de Cerámica y Vidrio and Cerâmica. In addition, Zanotto has contributed leadership to academia, industry and society through several executive and consulting positions. This work has included service as vice-president, counselor emeritus and director of the Brazilian Ceramic Society; head of LaMaV – UFSCar; curator of the São Carlos City High Technology Park; director of the São Paulo Academy of Sciences; founder and president of Vitrovita, the glass-ceramics innovation institute; chair of the TC7 (Crystallization Committee of the ICG); council member of the International Commission on Glass and of the International Ceramic Federation; and member of the advisory board of the International Materials Institute for New Glass Functionalities.

Zanotto says his career was inspired by O. J. Whittemore, who then was a visiting professor from the University of Washington. Shortly thereafter, he studied under Charles Greene, who had retired from Corning and Alfred University. He became hooked on glass-ceramics in 1979 after reading Peter McMillan's book on the topic and became fascinated with the numerous possibilities afforded by the controlled crystallization of glasses. He gained his masters degree under the guidance of Aldo F. Craievich and, while working on his PhD, was introduced to the "intricate secrets of glass crystallization by the great Peter F. James. I owe a lot to all these distinguished researchers," he says.

Zanotto says has several future goals in mind, including gaining a clear understanding on why the nucleation theories fail to describe crystal nucleation rates in glasses, the relationships between glass topology and crystallization mechanism, and the effective diffusion process controlling crystallization at very deep undercoolings (near T_g). He says he would also like to write an updated textbook on glass science.

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