DESCRIPTION

Although ceramics have been known to mankind literally for millennia, research has never ceased. Apart from the classic uses as a bulk material in pottery, construction, and decoration, the latter half of the twentieth century saw an explosive growth of application fields, such as electrical and thermal insulators, wear-resistant bearings, surface coatings, lightweight armour, or aerospace materials. In addition to plain, hard solids, modern ceramics come in many new guises such as fabrics, ultrathin films, microstructures and hybrid composites.

Built on the solid foundations laid down by the 20-volume series Materials Science and Technology, Ceramics Science and Technology picks out this exciting material class and illuminates it from all sides.

Materials scientists, engineers, chemists, biochemists, physicists and medical researchers alike will find this work a treasure trove for a wide range of ceramics knowledge from theory and fundamentals to practical approaches and problem solutions.

ABOUT THE AUTHOR

Ralf Riedel has been a professor at the Institute of Materials Science of Darmstadt University of Technology since 1993. He received his degree in chemistry in 1984, followed by two years of dissertation work with Professor Ekkehard Fluck at the University of Stuttgart. After postdoctoral research at the Max-Planck Institute for Metals Research and the Institute of Inorganic Chemistry at the University of Stuttgart, he gained his lecturing qualification in the field of inorganic chemistry in 1992. He is a member of the World Academy of Ceramics and Guest Professor at the Jiangsu University in Zhenjiang, China, a Fellow of the World Academy of Ceramics.
American Ceramic Society and a recipient of the Dionyz Stur Gold Medal for merits in natural sciences. In 2006 he received an honorary doctorate from the Slovak Academy of Sciences, Bratislava, Slovakia. Professor Riedel has published more than 300 papers and patents and is widely known for his research in the field of polymer derived ceramics and on ultra high pressure synthesis of new materials.

I-Wei Chen is currently Skirkanich Professor of Materials Innovation at the University of Pennsylvania since 1997, where he also gained his master's degree in 1975. He received his bachelor's degree in physics from Tsinghua University, Taiwan, in 1972, and earned his doctorate in metallurgy from the Massachusetts Institute of Technology in 1980. He taught at the University of Michigan (Materials) during 1986-1997 and MIT (Nuclear Engineering; Materials) during 1980-1986. He began ceramic research studying martensitic transformations in zirconia nano crystals, which led to work on transformation plasticity, superplasticity, fatigue, grain growth and sintering in various oxides and nitrides. He is currently interested in nanotechnology of ferroelectrics, thin film memory devices, and nano particles for biomedical applications. A Fellow of American Ceramic Society (1991) and recipient of its Ross Coffin Purdy Award (1994), Edward C. Henry Award (1999) and Sosman Award (2006), he authored over 90 papers in the Journal of the American Ceramic Society (1986-2006). He also received Humboldt Research Award for Senior U.S. Scientists (1997).