

Preface



This special issue of the Journal of the European Ceramic Society is dedicated to Professor Arturo Domínguez-Rodríguez on the occasion of his 60th birthday. The present selection of papers is in recognition of his outstanding contribution to ceramics science and materials physics.

With respect to Professor Domínguez-Rodríguez's lifework, the papers are authored by former and current collaborators and cover aspects of modern trends in advanced structural ceramics, including sintering, low-temperature and high-temperature mechanical behaviour, modelling of mechanical properties as well as novel structural ceramic composites. The contributions highlight the increasing technological significance of advanced ceramic materials and present concepts of mechanical response as a landmark for complex shape design for industrial applications.

Born in El Campillo/Huelva (Spain) on 6th June 1946, Professor Domínguez-Rodríguez has enjoyed a long and highly successful research career in the field of materials science and ceramic research. He studied Physics at the University of Sevilla, where he received his Master Degree in 1969. After that, he applied to become a PhD student at the Department of Condensed Matter Physics in that University, under the supervision of Professor Rafael Márquez Delgado. Professor Márquez-Delgado, conscious of his remarkable attitude towards scientific research, proposed him to move to the Laboratoire de Physique des Matériaux, Bellevue (France). There, he completed his PhD

thesis on "The Plasticity of Nickel Oxide Single Crystals at Low and Intermediate Temperatures" under the supervision of Professors Jean Philibert and Jacques Castaing. Such effort was compensated by very strong professional and affective links with both of them for the last 30 years. This cooperation has also allowed many junior collaborators of Professor Domínguez to find their own way on their future careers.

In 1979 he became associate professor at the Department of Condensed Matter Physics at the University of Sevilla, where he became full professor in 1986. He is now the head of the Mechanical Properties of Solids group (MPG), which he founded on his return back from France, in 1975.

Particularly noteworthy is the key role Professor Domínguez-Rodríguez played in establishing the Mechanical Properties laboratory in the 1970s. It was largely due to his dedication and commitment in his capacity as head of the MPG that his Laboratory soon produced remarkable results, attracted scientist from abroad and gained worldwide reputation. His research focus, initially on the plasticity of transition metal oxides, rapidly expanded to include a whole range of systems, particularly yttria–zirconia ceramics. Professor Domínguez-Rodríguez, together with his MPG team, has set many milestones in the field of zirconia ceramics, alumina ceramics, ceramic composites, non-oxide ceramics and he is at the very forefront of an intensive effort to elucidate the origin and characterization of superplasticity in ceramics.

Professor Domínguez-Rodríguez has developed fruitful collaborations with prestigious laboratories all over the world, from USA, Europe, Israel to Japan. He served as a guest professor at Case Western Reserve University, Cleveland (USA) in 1987 and he has been guest researcher in many research centres, such as Tokyo Institute of Technology, Tokyo (Japan), National Center for Electron Microscopy at the Lawrence Berkeley Laboratory (USA), or Technion Institute of Technology (Israel) among others.

Professor Domínguez-Rodríguez has co-authored more than 300 publications which cover almost all aspects of mechanical behaviour of structural ceramic materials and are a landmark for scientists in the field.

Professor Domínguez-Rodríguez's expertise has been sought by international scientific organizations (Fellow of the American Ceramic Society since 2002) as well as by Spanish authorities,

being chosen as the Head of the National Committee for Evaluation of Research Activity (A.N.E.P.) and Research Proposals in Materials Science in Spain (1999–2003).

In recognition of Professor Domínguez's major scientific accomplishments and his continuous dedication to science, he was distinguished with the "Maimonides Award" by the Junta de Andalucía (Spain) in 1997.

The First International Workshop on "Mechanical Properties of Advanced Materials: Recent insights" was held in Fuenteheridos, Huelva (Spain) a few miles from Professor Domínguez's birthplace. Around 40 leading scientists from all over the world were congregated to present and discuss their current research problems and make some prospects on the future trends in such a challenging field. All participants and contributors to this issue have had the chance of co-authoring papers with Professor Domínguez-Rodríguez. The event was a great success from the point of view of the quality of the scientific presentations, as well as for the open-friendly atmosphere and full recognition of Professor Domínguez-Rodríguez's scientific merits and warm-hearted character.

On behalf of the contributing authors and with great pleasure we extend our best wishes and warmest greetings to Professor Domínguez-Rodríguez on his 60th birthday. As a prolific

researcher and author, he has won the admiration and respect of his collaborators, the research community and scientists worldwide. As a person, he is a funny open-minded honest man who brings joy and friendship around him.

We are sure that his truly innovative contributions to ceramics science will have a lasting impact on advancements in the basic understanding of mechanical properties.

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