



Preface

The tenth edition of the international conference on Electroceramics was held on the historical town of Toledo, Spain on 18–22 June 2006. This issue contains a selection of the refereed papers that have been presented during the 3 days of intense discussions. The conference was organized together by researchers of the Consejo Superior de Investigaciones Científicas and the Sociedad Española de Cerámica y Vidrio, with the help of the Universidad Politécnica de Madrid and the Universidad de Castilla la Mancha.

Electroceramics conferences continue to provide the reference point to one of the most attractive areas in the materials science nowadays. Electroceramics consolidated in the last decade because of fascinating material functions and thousand of applications. The combination of basic science and technological impact allows the academic and the industrial actors to focus on a variety of materials, structure–microstructure related properties and devices that cover the full spectrum of materials development. Meanwhile the “traditional” insulator facilitates the electricity era and opened the tremendous technological development of the 20th century, the nanoworld represents an unique opportunity for this field and a challenge for the enthusiastic electroceramic community. At the present time each single device or apparatus that use electric energy incorporates an electroceramic element. In the era of communications we work to provide, in a figurative sense, ceramic muscles, ceramic eyes, ceramic ears, ceramic noses or ceramic memories to the electronic microprocessors in form of sensors and actuators. In addition electroceramics are key materials for the expected development of clean energies and biomaterial applications.

Electroceramics X, Toledo, 18–22 June 2006, was a perfect meeting place to focus on the future of electroceramics. Four hundred and sixty participants from 38 countries were involved in the conference. Seventy-five percent of the participants come from Europe and near 16% from Asia. Spain having 95 participants and Germany 42, France 31, Korea 30, Japan 28 and Portugal 20 were the main contributor countries. During 3 days, 2 plenary conferences, 28 invited speakers, 201 oral presentations and 294 posters, configured an intense and very attractive programme. Two days with parallel sessions and a poster session were organized under the auspices of the EU COST Action 539 “Electroceramics from Nanopowders Produced by Innovative Methods” (ELENA).

In addition to traditional topics focussed on ceramic processing, ferroelectric thin and thick films and ionic conductors among others, new topics arose during the conference. Among the new topics semiconductor bioceramics as neural and osseous growth showed new future avenues for both the electroceramic and bioceramics materials. One of the most attractive topics of the conference corresponded to the integration issues by using nanotechnology tools. Solid oxide fuel cells allows generating clean energy by using a self-support membrane approach. One of the hot topics in electroceramic was the lead-free piezoceramics. The recent growth of piezoceramics applications and in particular those related to automotive applications as electronic injection and vehicle sensing increased spectacularly the materials consumption. Today the best piezoelectric ceramics content a high percentage of lead into its composition. The toxicity is quite low because the lead is in solid solution and is stable, but recycling issues require new friendly environmental materials. Twenty-three presentations in lead free ceramics showed both how this new topic emerges and how the scientific community reach alternatives that will be very close to solve the problem in few years.

Next electroceramic meeting will be held in Manchester 1–3 September 2008 and Prof. Robert Freer will serve as chairman of the conference.

We would thank to all plenary and invited speakers, oral and poster contributors, session chairs and manuscript referees who have devoted their time and enthusiasm to make a successful conference. We are in debt with the International Advisory Board and National Scientific Committee for their advice in the planning of the conference.

Special thanks are also due to the sponsors of the conference: Ministerio de Ciencia y Tecnología, Consejo Superior de Investigaciones Científicas, Junta de Comunidades de Castilla la Mancha, Universidad de Castilla la Mancha, Cámara de Comercio de Toledo, Ayuntamiento de Toledo, CYTED, INASMET-Tecnalia, COST Action 539 ELENA, Elsevier, Materials Mates, M.E. Schupp, NT-instruments, Mind NoE and INAEL S.A.

We are greatly grateful to colleagues and staff members of the organizing committee that devoted time and interest to make the conference real. We would like to acknowledge the staff of the Spanish Ceramic and Glass Society for their contribution to

the conference and mention specially to Ofelia Sanz Guerrero who took the duty of Editorial Assistant for the publication of these proceedings. Finally, we are grateful to the students of the Instituto de Cerámica Vidrio, CSIC, Instituto de Automática Industrial, CSIC, and ETSIT Universidad Politécnica de Madrid, for their help. They were an extraordinary support team for the success of the conference with their help and enthusiasm. They represent a strong motivation to continue working on electroceramics.

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