



# Editorial

As we approach the millenium, one is prompted, more than ever, to examine the past and attempt to foretell future events. Based on recent trends, it is probably not unfair to say that the year 2000 will be the year of Electroceramics. The inevitable shrinkage of memory devices following Moore's law has already driven the thickness of the SiO<sub>2</sub> layer in MOS devices down towards 10 nm and would have to drop below 1 nm as memory chips surpass 64 Mb. The search is therefore on for alternative materials which exhibit both higher dielectric constants such as Ta<sub>2</sub>O<sub>5</sub> and (Ba,Sr)TiO<sub>3</sub> and compatibility with Si processing. Likewise, with the emergence of nonvolatile memories, ferroelectric oxides such as Pb(Zr,Ti)O<sub>3</sub> and SrBi<sub>2</sub>Ta<sub>2</sub>O<sub>9</sub> have received increasing attention. At the same time, the search is on for interlevel dielectrics with dielectric constants lower than that of SiO<sub>2</sub> for reduced delay times in high speed circuitry. Oxyfluorides, as well as layers with high void content, are receiving a good deal of attention. Overall, it is fair to say that the dielectrics question represents a key factor in determining the rate at which the density of integrated circuits will continue to grow. Many such features were recently addressed in the special issue *Electroceramic Thin Films-Integration Technologies and Device Concepts* edited by Prof. R. Waser of RWTH Aachen. Many other areas of electroceramics are also experiencing growing attention including oxide sensors and actuators, magnetoresistive and superconducting devices, batteries and fuel cells and optoelectronic materials and devices. In the latter category, one must mention the recent excitement about the large band gap nitrides (AlN-GaN-InN) and their successful implementation as blue and UV LEDs and lasers and their potential for high power electronics.

Regarding more specifically progress within our own *Journal of Electroceramics*, I want again to thank all of you who have enthusiastically supported the journal by submitting high quality articles, carefully reviewing manuscripts, editing special issues and providing advice and encouragement. Because we were able to complete our 1999 issue by July 1st of this year, we have assurance from our publisher that the journal will, in the year 2000, increase from four to six or possibly nine issues. With this issue, we also initiate our first invited "feature article" on Conducting Polymer Composites by R. Strumpler and J. Glatz-Reichenbach of ABB Corporate Research, Switzerland. This extensive article does an excellent job in reviewing the key issues relating to the "integration" of conductive ceramics and metals with polymer matrices. Because composite materials promise greater flexibility in achieving desired properties and in processing, we felt that this topic would also benefit from the publication of a special issue. We expect the issue on composites, edited by J. Maier and J. Fleig of MPI, Stuttgart, to be ready for publication within the first half of 2000.

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