



Editorial

In nearly all sectors of Electroceramics, there has been a continuing trend away from bulk towards thin film ceramics. Much of this shift has been driven by the growing ability to integrate greater numbers of often “exotic” materials into planar silicon technology. Other factors have included the drive to miniaturize magnetic storage devices, lower the operating temperatures of solid oxide fuel cells, facilitate the development of large area displays, smart windows and solar cells, as well as other factors too numerous to list. Methods for deposition of thin films vary widely and range from the high quality, low deposition rates characteristic of molecular beam epitaxy (MBE) requiring costly vacuum systems to electrochemical deposition that can be performed in a glass beaker. Obviously, many factors go into the selection of a deposition method and apparatus including control of film composition, morphology, perfection, deposition rate, spatial uniformity, compatibility with other materials, cost, etc. As the number of types of materials and components that need to be integrated increases, more restrictions are placed on the processing conditions that can be utilized. Furthermore, as a community, we are becoming more interested in metastable phases or structures (e.g. -nanostructured materials) which can not be heated to elevated temperatures without degrading or destroying their desired properties. We are therefore particularly pleased to bring to our readers this issue’s feature article entitled “Deposition of Ceramic Thin Films at Low Temperatures From Aqueous Solutions” prepared by Thomas P. Niesen (Max Planck Institute and University of Stuttgart) and Mark R. De Guire (Case Western Reserve University). Deposition from aqueous solutions offers many potential advantages including lower processing temperatures, lower capital equipment costs, lower shrinkage (compared to sol-gel techniques) and reduced environmental impact. This critical review is very extensive and should serve our readers well in bringing this potentially important processing approach to their attention.

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