Preface

Atomic layer deposition is a special pulse technique for growing solid films a layer at a time, using alternate and separate self-limiting surface reactions. The technique became known worldwide in the early 1980s. Although not universal, it has clear advantages. By applying this technique very uniform films can be formed over large areas, and these films will be conformal. Also, due to the steadiness of the growth by a monolayer or about a monolayer per cycle, an automatic thickness control down to the atomic level is possible. The procedure helps to avoid the formation of macrodefects during the layering and, with no concessions to the high controllability of the growth, softens the otherwise too strict demands on the outer delimiting factors. The technique has bright prospects, e.g., in supplying next-generation microcircuits with appropriate nanothick insulating and conducting layers. The specialists have enthusiastically accepted the new challenges in the field.

The present issue comprises a small selection of the materials of the 5th Baltic Symposium on Atomic Layer Deposition (BALD-5). BALD-5 was organized by the Institute of Physics of the University of Tartu. The venue was the history museum of the university or, to be more exact, the White Hall of the museum, located in an impressive building dating back to the Middle Ages. The symposium, which belongs to the series started in Sjökulla, Finland, in 1991, took place on 24–26 October 2002. Over 60 participants from 11 countries, with 39 reports, attended the symposium. An abstract book was printed, covering all the presentations but four. It seems to be a good idea to mention these here: (i) Deminsky, M. A., Knizhnik, A. A., Belov, I. V., Umanskii, S. Y., Rykova, E. A., Bagartur′yants, A. A., Potapkin, B. V., and Korkin, A. A. Mechanism and kinetics of zirconium and hafnium oxide growth in ALD reactor, (ii) Elliot, S. D. and Greer, J. C. First principles study of alumina growth by ALD, (iii) Knizhnik, A. A., Bagartur′yants, A. A., Potapkin, B. V., and Korkin, A. A. Investigation of zirconia film growth using MD-kMC code, and (iv) Li, W. M., Elers, K., Kostamo, J., Kaipio, S., Huotari, H., Soininen, M., Soininen, P. J., Tuominen, M., Haukka, S., Smith, S., and Besling, W. Deposition of WN_xC_y and CuO/Cu films by ALCVD™ method for Cu metallization.

A mere glance at the above-mentioned titles and the titles of the articles included in the issue shows that BALD-5 covered all aspects of atomic layer

deposition: fundamentals, instrumentation, methodology, and applications. The symposium distributed a considerable amount of recently acquired specialized knowledge over a part of the related community. The present issue continues and widens this mission.

The financial support of the Centres of Excellence programme of the European Commission to the entire mission is gratefully acknowledged. Many thanks are rendered to all participants who made the symposium significant, to everyone who contributed to its success in Tartu, to all authors of this issue, and to all reviewers of the manuscripts. It has been decided to conduct BALD-6 in Helsinki in 2004.

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