Foreword
Thermal Investigations of ICs and Microstructures (THERMINIC)

MICROELECTRONICS thermal experts from four continents gathered in the Fall of 1998 at the Fourth THERMINIC Workshop, Cannes, France. A formal Workshop Proceedings is not published, but it is now a tradition that the most valuable papers of the Workshop appear in special issues or special sections of leading, international journals. Because of the nature and scope of the workshop, two journals were chosen in which to have papers published, the *Microelectronics Journal* and the IEEE TRANSACTIONS ON COMPONENTS AND PACKAGING TECHNOLOGY.

The topics of the THERMINIC Workshops involve all of the thermal aspects related to integrated circuits, packages, microelectromechanical systems (MEMS), and the materials used in them including measurement, modeling, simulation, and application of thermal and electrothermal effects. In 1998, many papers discussed thermal simulation and measurement, as well as electro-thermal simulation. A full session was dedicated to sensors and actuators. In addition, some papers discussed theoretical problems of heat propagation. From this rich choice, the papers that follow in this special section were selected for their value and interest to the IEEE TRANSACTIONS ON COMPONENTS AND PACKAGING TECHNOLOGY. The papers published here represent only a small portion of the total number of papers presented at the THERMINIC Workshop. Of the many within the scope of the IEEE TRANSACTIONS ON COMPONENTS AND PACKAGING TECHNOLOGY, these are felt to be the best.

The first three papers of this special session discuss various aspects of thermal transient testing and evaluation.

Thermal monitoring and testing is the main subject of the first paper, written by V. Szkely *et al*. In this paper, the authors present a method and tools for on-line overheating protection. The presented method enables off-line transient thermal testing as well.

The paper of M. Carmona *et al*. presents an evaluation method, the METS method, for finding the thermal time constant spectrum of an electrical subsystem from the measured or simulated thermal transient responses.

A further thermal transient evaluation method, the TRAIT method, is presented in the paper of L. Pellegrino *et al*. and applied for the characterization of packaged vertical cavity surface-emitting lasers.

In the paper of J. Lohan *et al*., the experimental techniques are presented that are in use at Nokia to find the components operating junction temperatures.

The intensive use of image processing methods can strongly increase the user-friendliness of both simulation and measurement evaluation tools. In the paper of V. Szekely and M. Rencz, those image processing methods are presented that are regularly used in their thermal measurements tools.

Many of the papers presented at the Workshop dealt with thermal and electro-thermal simulation, heat propagation, measurement techniques and sensor related issues. The best within this scope are published in the *Microelectronics Journal*.

It is an honor and a pleasure for us to act as Guest Editors of this special section and to be able to collect a number of valuable articles in these topics of special interest.

We thank all of the authors for their wonderful work an their cooperation. We sincerely hope that this special section meets with the expectations of the readers as well.

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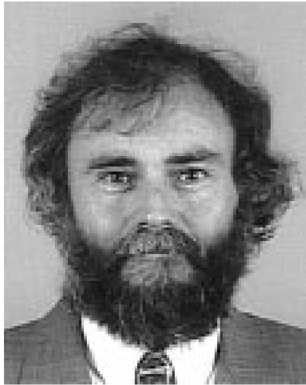

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