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# Membrane Computing

International Workshop, WMC 2003  
Tarragona, Spain, July 17-22, 2003  
Revised Papers



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# Preface

This volume is based on papers presented at the **Workshop on Membrane Computing, WMC 2003**, which took place in Tarragona, Spain, in the period July 17–July 22, 2003. This was the Fourth Annual Membrane Computing Workshop, and the first one held outside Romania. The first three meetings were organized in Curtea de Argeş, Romania – they took place in August 2000 (with the proceedings published in *Lecture Notes in Computer Science*, Vol. 2235), in August 2001 (with a selection of papers published as a special issue of *Fundamenta Informaticae*, Vol. 49, Nos. 1–3, 2002), and in August 2002 (with the proceedings published in *Lecture Notes in Computer Science*, Vol. 2597).

The 2003 workshop was the second workshop of the Molecular Computing Network (MolCoNet) funded by the EU Commission in the Fifth Framework Program Information Society Technologies (project number IST–2001–32008). The preproceedings of WMC 2003 were published as Technical Report 28/03 of the Research Group on Mathematical Linguistics from Rovira i Virgili University, Tarragona, and they were available during the workshop.

The current volume contains only a selection of the papers from the preproceedings. Moreover, the selected papers have been significantly modified/improved according to the really vivid discussions that took place during the workshop — all the selected papers were additionally refereed. The papers in the volume cover all the main directions of research in membrane computing, ranging from topics in mathematics and theoretical computer science, to (potential) applications in biology, sorting, ranking, linguistics, and computer graphics. Several implementations/simulations on computers, computer networks, or electronic reconfigurable hardware are also presented. Thus, the volume is a faithful illustration of the current state of research in membrane computing (a good source of information about membrane computing is the Web page <http://psystems.disco.unimib.it>).

The workshop was organized by the Research Group on Mathematical Linguistics from Rovira i Virgili University, Tarragona, Spain, under the auspices of the European Molecular Computing Consortium (EMCC). The program committee consisted of Carlos Martín-Vide (Tarragona, Spain), Giancarlo Mauri (Milan, Italy), Gheorghe Păun (Bucharest, Romania, and Tarragona, Spain), Grzegorz Rozenberg (Leiden, The Netherlands, and Boulder, Colorado, USA), and Arto Salomaa (Turku, Finland).

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November 2003

Carlos Martín-Vide  
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