

Preface

Aperiodic Crystals collects 37 selected papers from the scientific contributions presented at the Seventh International Conference on Aperiodic Crystals, *Aperiodic 2012*, held in Cairns, Australia from the 2nd to the 7th of September, 2012 and organized under the auspices of the Commission on Aperiodic Crystals of the International Union of Crystallography (IUCr). It followed *Aperiodic'94* (Les Diablerets, Switzerland), *Aperiodic'97* (Alpe d'Huez, France), *Aperiodic 2000* (Nijmegen, The Netherlands), *Aperiodic 2003* (Belo Horizonte, Brazil), *Aperiodic 2006* (Zao, Japan) and *Aperiodic 2009* (Liverpool, U.K.). The *Aperiodic* series of conferences in turn followed on four earlier conferences held under the title of *Modulated Structures, Polytypes and Quasicrystals (MOSPOQ)*. The eighth conference in the *Aperiodic* series will be held in Prague in 2015.

The program was wonderfully diverse, covering a wide range of topics including: the mathematics of aperiodic long-range order and the fascinating types of tilings resulting from it; the synthesis, growth and stability of metallic aperiodic crystals and related complex metallic alloys; new methods and associated structural characterisation studies of aperiodic crystals; theoretical and experimental studies of the electronic, magnetic and other physical properties of aperiodic crystals; partial order, correlated disorder, and structured diffuse scattering; modulated structures, quasicrystals and approximants; soft-matter quasicrystals, and aperiodic ordering in bio-molecules and proteins; the dynamics of aperiodic crystals; as well as aperiodic surfaces, thin films and adsorbates. This impressive diversity in subject matter is well reflected in the contributions to this volume.

The conference was attended by more than 110 delegates from 23 different countries, including Dan Shechtman from Israel, Laureate of the 2011 Nobel Prize in Chemistry. Prof. Shechtman delivered a special celebratory Nobel lecture on the 30th anniversary year of his pioneering electron-diffraction characterization of the first quasicrystal on April 8, 1982. The introductory tutorial talk by Ted Janssen highlighted the fact that we also celebrated a half a century of work on aperiodic crystals, which could be considered as dating back to the pioneering work of Pim de Wolff on γ - Na_2CO_3 around 1962 and published in 1964. Presentations at the conference included 3 invited introductory tutorials, 11 invited talks, 46 contributed

talks, and 43 poster presentations, all discussing state-of-the-art research in this fascinating field of scientific endeavour. What we know and what we still don't know about aperiodic order was carefully examined and hotly debated throughout this conference.

We would like to thank all the participants for coming the very long way to Australia as well as for their enthusiastic and considered contributions to, and participation in, the conference. Special thanks are due to the International Program Committee for their work in the organisation of the conference program and to the members of the Local Organizing Committee for making Aperiodic 2012 the very successful and highly stimulating meeting it was. We would also like to thank the wonderful staff from Springer for their help in the production of this volume. Finally, we gratefully acknowledge financial and other support from our sponsors.





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