Editorial Foreword

October 30, 2017 (E42). The scientific summer of 2017 was very busy: This Special Issue is dedicated to 5 conferences, the ISEC 2017, the CEC-ICMC 2017, the IUMRS-ICAM 2017, the MT-25 and the EUCAS 2017. It contains a number of plenary slide presentations of the 5 conferences, some with annotations to make them better understandable to readers who did not attend these live presentations, selected invited presentations and runners-up of the SNF contest for best-contributed presentation at the ISEC 2017. In addition, one Science and Technology Highlight is added as **HP127** and impressions of the EUCAS 2017 can be found in the Event Highlights as **HE113**.

EUCAS 2017

The 13th European Conference on Applied Superconductivity (EUCAS 2017) took place this year in Geneva / Switzerland, organized by two chairmen from the nearby CERN. Three of the impressive plenaries are published in this Issue. Ted Forgan of the University of Birmingham, UK, talked about the role of charge density waves in underdoped High-Tc materials, another step in trying to understand the origin of superconductivity in these materials, and Michael Eisterer of ATI Vienna (Austria) compared the physics and technology of Low-Tc and High-Tc Superconductors and the prospects for applications. Pascal Febvre, of the University of Savoie, Mont Blanc, France, addressed the recent developments in Superconducting Computing, in which not only the operating speed plays an important role, but even more the energy efficiency – a must for next-generation supercomputers. Also available in this Issue, Nobuyuki Yoshikawa gave an invited about recent research developments of Adiabatic Quantum-flux-parametron circuits, even a step in further reducing the energy efficiency in high-performance computing. In the Materials and Large Scale realm, respectively, recent progress in processing Fe-based superconducting wires was addressed in invited presentations as well as challenges in LTS, HTS and ITER magnet technology. In total, the EUCAS part contains 3 plenary contributions and 4 invited presentations. Further presentations will be published in a preview to Issue 43.

MT-25

The 25th Conference on Magnet Technology (MT-25) took place in Amsterdam/The Netherlands. In the plenaries, Bernard Bigot talked about the overall status of the ITER Project, Amalia Ballarino of CERN discussed the development of superconductors for future Large Scale Applications; Jianwei Liu gave an overview of advanced superconductors developed at WST, Hisaki Sakamoto of the development of superconductors at Furukawa Electric Group and Yoshiyuki Iwata of the development of Carbon-Ion Radiotherapy Facilities at the National Institute of Radiological Sciences, NIRS. Burkhard Prause of Bruker EST talked about divergent expectations: superconductors between industrial applications & cutting-edge science. Greg Boebinger of the U.S. National High Magnetic Field Laboratory in Tallahassee looked into the future of High Magnetic Field Science and Technology and talked about the proposed 60T DC magnet and 150T non-destructive pulsed magnet and the related materials requirements. The plenary talks were closed with a talk of Jürgen Kellers of the EcoSwing Collaboration about the development of a Superconductive Wind Power Generator within the EcoSwing Project and of Luca Bottura of CERN about High Field Accelerator Magnets as a path to new physics.

Impressive progress in high-field magnets was reported in a number of talks. In recent years, magnets have taken a huge development step by introducing HTS wires and tapes in magnet technology.

Among others, progress in the construction of a 43 T Hybrid Magnet at LNCMI-Grenoble was reported as well as work on a persistent current 1.3 GHz (30.5 T) NMR by Yoshiyuki Iwata was highlighted in a special plenary session for young scientists, both included in this Issue. Also, recent progress in an unusual application of superconductivity was presented: a superconducting induction heater with HTS magnets. This contribution is also included in this Issue, which in total contains 5 presentations, 2 of them annotated.

IUMRS-ICAM 2017

The 15th International Conference on Advanced Materials took place in Kyoto/Japan. It featured 9 plenary talks covering exciting advanced areas in material science, such as metal oxides for electronics, organic solar cells, helical polymers and graphene. The first plenary lecture, “Development of Sustainable Smart Society via Transformative Electronics,” was given by Nobel Laureate, Hiroshi Amano. Two Keynote Presentations (one annotated) are included in this Issue.

CEC-ICMC 2017

Because of the extremely short time period allowed for submission, only one plenary and two invited presentations made it in time for publication in our previous Issue No. 41. We are now in a position to add two contributions from the Institute of Electrical Engineering of CAS on most remarkable properties of MgB_2 wires (Dongliang Wang et al.) and pnictide wires (Xianping Zhang et al.), respectively, manufactured by fairly mature processing methods. Furthermore, Mitsuru Izumi et al. describe the development of advanced superconducting machines, which utilize bulk HTS-type permanent magnets.

ISEC 2017

The last Issue contained already a number of plenary and invited presentations given at the ISEC 2017 in Sorrento, Italy. This Issue publishes the 5 Runner-Up presentations that have already been available in a Preview to this Issue.