

Preface

This volume is a compilation of research papers presented at the Eighteenth International Conference on Ultrafast Phenomena hosted by the Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland from July 8 to 13, 2012. The Ultrafast Phenomena conferences are held every two years and are the premier international forum for discussion of the latest and most important results in ultrafast Science and Technology. These meetings bring together researchers spanning numerous fields of science and engineering to deliberate the latest advances in ultrafast optics and their applications in science and engineering. The conferences and associated published proceedings effectively disseminate the most recent scientific advances using ultrashort coherent pulses of light. More than 430 papers were presented at Ultrafast Phenomena XVIII. Significant progress was reported in the areas of X-ray spectroscopy, attosecond spectroscopy, X-ray and electron diffraction, multidimensional vibrational and electronic spectroscopies, high-order harmonics pulse generation, X-ray free electron physics and nonlinear optics. Scientific questions using these methodologies were addressed in the areas of ultrafast chemical dynamics in solutions, water hydration and interface dynamics, strong field effects in molecules, semiconductor and organic solids, biomolecules and photobiology, photosynthesis, metamaterials, spin, charge and lattice dynamics in highly correlated systems, and nanosystems. These examples are but a small subset of the research summaries gathered in this volume, which provides a valuable synopsis of the present advances and impact of ultrafast technology in illuminating fundamental processes in physics, chemistry, and biology. There were more than 480 attendees at the meeting, about 40% of whom were graduate and postdoctoral students. Increased student attendance energized the proceedings, and discussions were further enhanced by the beautiful setting of Lake Geneva and the Alps.

Several people and organizations made invaluable contributions to the success of the conference. The international program committee reviewed over 570 submissions and organized the scientific program. The staff of the European Physical Society, of the Université de Lausanne and of the EPFL deserve special thanks for making the conference arrangements and running a smooth and efficient meeting. We are particularly grateful to André Wobst for coordinating the submissions for these proceedings, and for his help in bringing this volume together.

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