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Introduction

The twelfth edition of the Spintronics conference gathered about one hundred and fifty speakers in San Diego, California (United States) from Sunday 11 August to Thursday 15 August 2019.

In line with the previous editions, Spintronics XII, held in the framework of the SPIE Nanoscience + Engineering 2019 symposium, covered very hot topics in Spintronics. The conference was an invaluable opportunity for informal and stimulating discussions between experts as well as for networking in a friendly atmosphere, testifying to the vitality of our field of research.

Featuring 36 oral sessions, the symposium gave a broad and timely snapshot of the active and emerging fields in spintronics and spinorbitronics. Recent results at the forefront of theoretical, experimental, and technological developments were discussed. An important place was reserved for *Spin Hall Effect* and for *Devices and Sensors*, with three focused sessions, as well as to *Antiferromagnetic Spintronics*, *Skyrmions*, *Topological Insulators*, *Superconductivity*, *Spin-Orbit Torque*, *Graphene and Transition-Metal Dichalcogenides*, and *Neuromorphic Computation* with two focused sessions.

Special attention was paid to *Semiconductor Spintronics*, *Quantum Wells*, *Quantum Dots*, and *2DEGs*, *Organic Spintronics*, *New Materials for Spintronics*, *Spin Caloritronics*, *Spin Pumping and Plasmonics*, *Magnonics*, *Spin-Transfer and ST Oscillators*, *Spin-Orbit Coupling*, *Micromagnetism and Spin Systems*, *Ultrafast Phenomena*, *Spin Coherence and Quantum Effects*. Emphasis was also put on *Spin Acoustics*, *THz Spintronics*, *Spin Lasers*, and *Majorana Fermions*.

Finally, we are grateful to the SPIE staff and to the Program Committee members for their tremendous work. We give special thanks to all colleagues and friends who helped organize successful focused sessions. We warmly thank all the authors and speakers for their active participation. They have made this conference a great success.

Henri-Jean M. Drouhin
Jean-Eric Wegrowe
Manijeh Razeghi
Henri Jaffrès

