Preface

The International Electron Devices and Materials Symposium (IEDMS) has a long and successful history. It is an annual flagship international conference in Taiwan, which gathers researchers and scientists from different parts of the world to disseminate their latest research outcomes with the research community in the field of electronic devices and materials. The IEDMS 2019, which represents the 24th conference in the series, was hosted by Chang Gung University and was held at the Four Points by Sheraton, Linkou, New Taipei City, Taiwan, from 24 to 25 October 2019. Over 140 papers were presented on the conference ground. We are truly fortunate to select a few very best papers from the conference to present in this *Journal of Electronic Materials* (JEM) topical collection. The Guest Editorial Board has included three invited review papers contributed by prominent research groups from the United States, Canada, and Taiwan.

The papers presented in this special collection span a wide spectrum of electronic material fields of study. The wide-bandgap material device is the pillar of the new generation of power electronics. Over one-half of the papers presented in this topical collection are about the characterization of wide-bandgap material devices. Among these is the invited article titled “Current Trends in the Development of Normally-OFF GaN-on-Si Power Transistors and Power Modules: A Review” by Namjee Kim and her collaborators in Prof. Wai Tung Ng’s research group in the University of Toronto, Canada. The paper reviews the latest research works on GaN-on-Si power transistors and their application in modern power modules. This paper provides readers an easy walk through the latest developments in this field.

Another hot field of study is electronic materials used to perform quantum computing. The invited review paper by Liann-Be Chang and his

collaborators in Prof. Chang-Ray Chang’s research group from the National Taiwan University, Taiwan, titled “Cryogenic Materials and Circuit Integration for Quantum Computer,” provides an excellent review on the physics behind the materials and circuits adopted in quantum computing. This paper enriches the knowledge in the field, and is suitable for readers with different backgrounds.

The last invited review paper in this special collection is authored by Yu Zheng and his collaborators in Prof. Cary Yang’s research lab in Santa Clara University, USA. The title of the paper is “Carbon Nanotube-on-Graphene Heterostructures,” which both provides a review and presents new research results in carbon nanotubes, a topic that is leading the nano-electronic breakthrough from the limitations of silicon technology.

Other papers presented in this collection cover topics in the field of high-K dielectric, solar cell and nanotechnology, which fill the gaps of recent developments in electronic devices and materials. The Guest Editorial Board is delighted to be able to collaborate with the Conference Editorial Board to organize this special collection, and also appreciate all the assistance provided by the Editorial Board and the managing editor of JEM.

We sincerely hope that readers of this special collection will find the papers presented useful and a source of inspiration for their future research work.

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