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Contents

5th Special Issue on the Workshop on Next-generation Front-edge Optical Science Research
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Preface

Ionizing radiation detectors and sensors have been widely used for many industrial and scientific applications, and most of the sensors use luminescent materials for the main device. Such luminescent materials are roughly classified into two types: scintillators and storage phosphors. Scintillators can convert ionizing radiation to thousands of low-energy photons from ultraviolet to near-infrared wavelengths immediately after the absorption of the ionizing radiation. The storage phosphors can accumulate the energy of ionizing radiation by carrier trapping within several weeks. These storage phosphors can be recognized as three types depending on the luminescence mechanism: optically stimulated luminescence (OSL), thermally stimulated luminescence (TSL), and radio-photoluminescence (RPL). In this special issue, we focus on such luminescent materials for ionizing radiation detectors and sensors.

The workshop on Next-generation Front-edge Optical Science Research showcases recent achievements in this field from the viewpoint of phosphor material physics and chemistry for the detection of ionizing radiation. The 1st, 2nd, 3rd, and 4th special issues were published in April 2015 (seven papers, *Sensors and Materials*, Vol. 27, No. 3), August 2016 (twelve papers, Sensors and Materials, Vol. 28, No. 8), October 2017 (eleven papers, Sensors and Materials, Vol. 29, No. 10), and November 2018 (twelve papers, *Sensors and Materials*, Vol. 30, No. 7), respectively. For this 5th special issue, ten papers have been accepted pending mandatory changes and final examination by the Guest Editors. This special issue presents the current development of sensor technology for ionizing radiation, especially in academic research.

In closing, I sincerely thank Dr. Yutaka Fujimoto, Tohoku University, for his meticulous editing, and Ms. Misako Sakano, Editorial Department of MYU K.K., for her kind support in the publication of this 5th special issue.

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