

**3RD SPECIAL ISSUE ON THE WORKSHOP
OF NEXT-GENERATION FRONT-EDGE OPTICAL SCIENCE RESEARCH**

PREFACE



Various luminescent phosphor materials have been used for the detection of ionizing radiation. Ionizing radiation detection using the luminescence phenomenon includes scintillation, thermally stimulated luminescence (TSL), optically stimulated luminescence (OSL), and radio photoluminescence (RPL). These luminescence processes have been used to detect ionizing radiation doses in various fields of science and industry, such as basic physics, nuclear medicine, medical imaging, environmental & individual radiation monitoring, space dosimetry, and radiography. The demand for high-quality phosphor materials has increased owing to emerging applications in various fields, especially in radiation dose monitoring around the site of Fukushima Nuclear Power Plant due to the serious accident that occurred on March 11, 2011.

At present, however, the mechanism underlying the various luminescence processes under ionizing radiation is unknown. To develop high-quality phosphor materials, the development of novel materials and an investigation into the basic processes associated with excited states are both important.

The Workshop on Next-Generation Front-Edge Optical Science Research showcases recent achievements in this field from the viewpoint of phosphor materials physics and chemistry for ionizing radiation detection. The 1st special issue with seven papers was published in April 2015 (*Sensors and Materials*, Vol. 27, No. 3) and the 2nd special issue with twelve papers was published in August 2016 (*Sensors and Materials*, Vol. 28, No. 8).

In this 3rd special issue, eleven papers were accepted with mandatory changes and final examination by the Guest Editor. This special issue presents the current development of sensor technology for ionizing radiation, especially in academic research.

In closing, I sincerely thank Ms. Misako Sakano, Editorial Department of MYU K.K., for her kind support in the publication of this 3rd special issue.

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