EDITORIAL

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Preface to the Special Topic on Deep Ultraviolet Light-Emitting Materials and Devices

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In recent years, materials and devices operating in the ultraviolet (UV) regime have attracted significant attention and therefore experienced rapid development. On the one hand, following the thriving advancement of GaN-based blue and white LEDs, which have brought a revolution in lighting sources, various groups are expanding their research work in Al(Ga)N materials and Al(Ga)N-based UV devices with the aim to explore more potential applications in shorter wavelength regime of group III-nitrides. While on the other hand, some binary alloys such as SiC, Ga_2O_3, BN, etc, whose bandgaps lie in the UV region, have been accomplished for a variety of applications. The development of UV materials laid the foundation for UV devices. Nevertheless, each material has its own benefits and constraints. More efforts should be devoted to overcoming the obstacles and challenges, in order to improve the material quality and devices performance.

Here we organized a special topic on deep ultraviolet light-emitting materials and devices, including the contributions from 8 groups of researchers, which generally covers the ongoing or future research directions in the field of ultraviolet materials and devices. Specifically, we have one comment overviewing ongoing progress on UV optoelectronics materials and devices and view about UV laser. One review paper provides critical review of DUV light-emission and detection devices based on group III-nitrides, III-oxides, two-dimensional materials and their heterogeneous integration. One review paper presents recent progress of SiC UV single-photon counting avalanche photodiodes and addressing the challenges and problems. One review paper overviews the AlN growth by HVPE. One article reports a 277 nm DUV LD with a combination of BGaN and AlGaN and one article focuses on AlN growth on nano-patterned sapphire substrate by MOCVD. One article reports on Ga_2O_3 growth by plasma-assisted pulsed laser deposition.

We sincerely hope that this special topic could provide useful information to the readers working on ultraviolet materials and devices and inspire many more to enter this field. We would like to thank all the authors who have contributed high-quality peer-reviewed articles to this special topic. We are also grateful to the editorial and production staff of *Journal of Semiconductors* for their superb assistance.