Development of Rocksalt-structured-MgZnO-based UV-C Lamp Emitting in 190-220 nm Spectral Range

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Rocksalt-structured (RS) MgxZn1-xO alloys are candidate materials for deep ultraviolet and vacuum ultraviolet emitters as an ultra-wide-bandgap oxide semiconductor. Our group has reported growths of atomically-flat single crystalline RS-MgxZn1-xO films on (100) MgO substrates by the mist chemical vapor deposition (mist CVD) method[1-3]. Observation of cathodoluminescence in 187-223 nm spectral range at 300 K was demonstrated[4].

In this study, RS-MgxZn1-xO polycrystalline films were grown on quartz glass substrates by mist CVD method. UV-C lamp emitted at 202 nm was first demonstrated by employing the RS-MgZnO film as an emission layer and 146-nm line of Kr2 excimer lamp as an excitation source.

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