

真空紫外領域での光学応用を目指した材料探索

Development of optical materials for vacuum ultraviolet

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We report on our work on rare earth ion-doped fluoride crystals for solid-state vacuum ultraviolet (VUV) laser applications. Fluoride crystals are being studied as excellent solid-state laser host materials because of their wide band gaps which make them transparent down to the VUV region (~ 100 nm). Moreover, these crystals have been successfully doped with rare earth ions whose interconfigurational transitions result in broad fluorescence bandwidths. We will then present our research activities which include the spectroscopic and numerical investigations of cerium (Ce^{3+})-doped LiCaAlF_6 and the synthesis and characterization of neodymium (Nd^{3+})-doped LiCaAlF_6 , LuLiF_4 , and LaF_3 . We will also share some of our results on other perovskite fluoride crystals and the exciting outlooks of our investigations.