SEM-CL spectra for an Y₂O₃ coating and sintered Y₂O₃ sample are shown in Fig. 1. A luminescence peak is observed around 350 nm in sintered bulk sample. On the other hand, in coating sample, a peak around 450 nm is observed and intensity of the peak around 350 nm increases with calcination temperature. The balance of the peaks of 350 nm and 450 nm could be used for examination of crystallinity of the Y₂O₃ coating.

In a sintered B₄C sample, SEM-CL spectrum was compared before and after a 34 keV H⁺ beam irradiation. As shown in Fig. 2, the luminescence peak position shifted from 550 nm to 570 nm in the irradiated part. It can be considered that the red shift in luminescence occurs when the crystallinity degrades with defects.

The correlation between the crystal conditions and luminescence spectra will be continuously examined, and comparison with the change in the band structure obtained from theoretical calculation will also be studied.

Fig. 1. SEM-CL spectra of sintered bulk Y₂O₃ sample and Y₂O₃ coating sample fabricated by MOD method.

Fig. 2. Change in SEM-CL spectrum of 34 keV H⁺ beam irradiated sintered B₄C sample.