Local characterization of defect distribution on organic EL device by using STM

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Local defects in an electroluminescence (EL) device have a large effect on its brightness and lifetime. However, detailed analytical method of such local defects has not been established. In this study, we investigated the surface morphology and emission character of an organic EL device simultaneously by STM emission spectrography. Figure 1 shows STM image and emission intensity distribution. Observed intensity distribution does not have a strong correlation with the surface morphorogy. We interpret the dark area are due to an ill-formed substrate/organic-layer interface. STM emission spectrography is shown to clearly visualize the defects in an EL device.

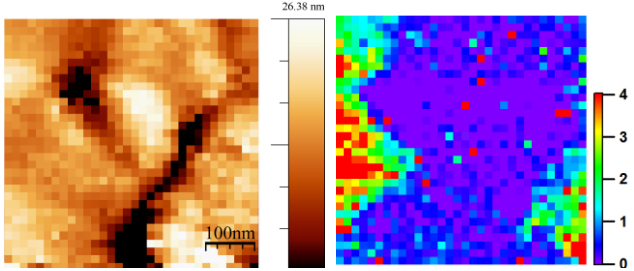

Fig. 1 STM image and Emission intensity distribution
(*Vs*=10V, *It*=1.0nA, Exposure 10sec/1point)