

Abstract Submitted
for the GEC12 Meeting of
The American Physical Society

Preparation of Alq₃ thin films using a pulsed laser deposition method with cooling target by liquid nitrogen YOSHIAKI SUDA, TAMIKO OHSHIMA, HIROHARU KAWASAKI, TOSHINOBU SHIGEMATSU, YOSHITO YAGYU, TAKESHI IHARA, Sasebo National College of Technology — We have prepared Alq₃ (tris (8-hydroxyquinoline) aluminum) thin films for organic electroluminescence by a pulsed laser deposition (PLD) method. The bulk Alq₃ target was not able to produce by sintering above 1,000 °C, because the glass transition temperature of Alq₃ was about 160 °C. Therefore, the density of Alq₃ target (about 1.3 g/cm³) was lower than that of the target used by PLD generally. In order to stabilize the density of the Alq₃ target, we cooled the target by liquid nitrogen. The temperature of Alq₃ target cooled by liquid nitrogen was -120 °C. In this study, we have prepared Alq₃ thin films by a Nd:YAG laser (532 nm) deposition method with the cooling target by liquid nitrogen. The experimental results suggest that Alq₃ thin films are deposited at the fluence above 2.3 J/cm². FT-IR spectra of the prepared films are as same as those of the Alq₃ powder. UV-Vis spectrum shows that the prepared films have an absorption peak around 400 nm, which is distinct absorption peak of Alq₃. The results suggest that structural and optical properties of the films prepared by cooling target are in agreement with Alq₃ for organic electroluminescence.

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Date submitted: 13 Jun 2012

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