

5th World Congress on

GREEN CHEMISTRY AND GREEN ENGINEERING

July 19-20, 2018 Melbourne, Australia

Growth mechanism of Alq₃ single-crystal in [C₁₂mim] [TFSI] ionic liquid via solution method**Dong Chan Shin, Se Yeon Park and Ji Min Seo**
Chosun University, Republic of Korea

The organic semiconductor is attractive candidate for the next generation electronic devices due to high flexibility, low production cost and easy fabrication of large area devices through solution process. However, since the organic semiconductor material has a van der Waals bond, the charge transport layer is unstable. Despite several researches, the intrinsic conducting properties of the organic semiconductor materials have not been clearly understood. To investigate intrinsic properties of the materials high quality single-crystal of the organic semiconductor materials are needed. To obtain large size single-crystal, understanding for growth mechanism of the organic semiconductor material is essential. We have fabricated of Alq₃ single-crystal using a [C₁₂mim] [TFSI] ionic liquid as a solvent. Isothermal heat-treatment has been carried out at 100 °C for 1 h, 2 h, 3 h, 4 h, 5 h and 6 hours with 7 mol% compositions. The Alq₃ single-crystals were c-axis grown in hexagonal rod shape. They showed different crystal growth shapes according to the isothermal heat-treatment time. The shape of single-crystal Alq₃ changes from growth shape to equilibrium shape. Our research could be promising process to improve electrical properties of organic semiconductor for many commercial devices such as Organic Light Emitting Diode (OLED), Organic Thin Film Transistor (OTFT) and organic solar cell.

Biography

Dong Chan Shin has obtained his BS degree in Materials Science and Engineering from Korea University and has pursued his MS and PhD degrees in Materials Science and Engineering from Korea Advanced Institute of Science and Technology, South Korea. He was the Postdoctoral Associate at KAIST and Michigan Technological University. He was a Senior Researcher at Samsung SDI. He is presently a Professor in Department of Advanced Materials Engineering at Chosun University, South Korea. His current research is photonics area, specifically, OLED display and lighting, photonics crystal and its application to display. He has written 2 book chapters and more than 90 journal articles. He is a Member of the Ceramic Society of Korea; the Korean Information Display Society; The Materials Research Society of Korea; The Optical Society of Korea and MRS.

dcshin@chosun.ac.kr

Notes: