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Structural Property of Pentacene Film Prepared by Hydrogen Chemical Transport Deposition

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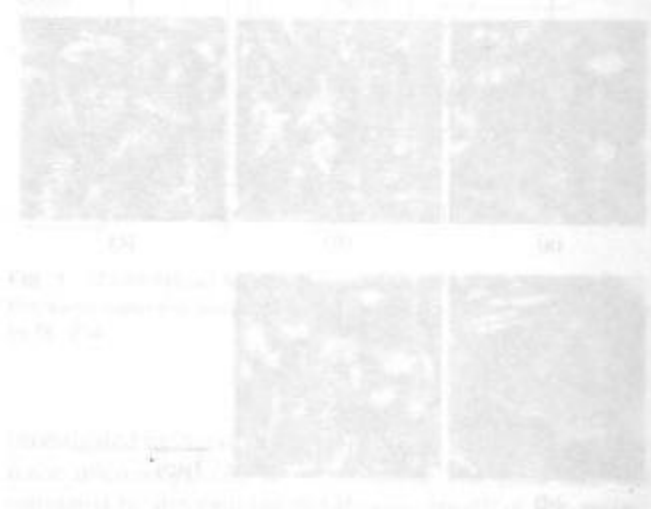
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Atsushi Sugihara, Yuya Sakuraba, Kay Yakushiji, Shinji Yuasa, Koki Takanashi
- 028002 **Structural Property of Pentacene Film Prepared by Hydrogen Chemical Transport Deposition** (2 pages)
Akira Heya, Hiroshi Hasegawa, Naoto Matsuo

Deposition of pentacene film on a non-single-crystalline substrate using a titanium-nitride buffer layer. The structural property of pentacene film prepared by hydrogen chemical transport deposition (HCTD) on a non-single-crystalline substrate using a titanium-nitride buffer layer was investigated. The results show that the pentacene film prepared on a titanium-nitride buffer layer has a higher degree of orientation than that prepared on a substrate without a buffer layer. This is because the titanium-nitride buffer layer has a high degree of orientation, which is transferred to the pentacene film during the HCTD process. Therefore, a high degree of orientation is achieved for the pentacene film prepared on a titanium-nitride buffer layer. This is a very important result for the application of pentacene film in organic light-emitting diodes (OLEDs).



The film thickness was measured by X-ray photoelectron spectroscopy (XPS). The results show that the film thickness is about 10 nm. The surface morphology of the pentacene film prepared on a titanium-nitride buffer layer is shown in Fig. 1. The surface morphology of the pentacene film prepared on a titanium-nitride buffer layer is much smoother than that prepared on a substrate without a buffer layer. This is because the titanium-nitride buffer layer has a high degree of orientation, which is transferred to the pentacene film during the HCTD process. Therefore, a high degree of orientation is achieved for the pentacene film prepared on a titanium-nitride buffer layer. This is a very important result for the application of pentacene film in OLEDs.