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Direct patterning and characterization of large area, single layer MoS₂ film synthesized by chemical vapor deposition WOANSEO PARK, Seoul Natl Univ, JAEYOON BAIK, Pohang Accelerator Laboratory, TAE-YOUNG KIM, KYUNGJUNE CHO, Seoul Natl Univ, WOONG-KI HONG, Korea Basic Science Institute, HYUN-JOON SHIN, Pohang Accelerator Laboratory, TAKHEE LEE, Seoul Natl Univ — Molybdenum disulfide (MoS₂) has gained a significant amount of attention due to a great potential for atomic-film electronics. Recently chemical vapor deposition (CVD) method has been utilized to synthesize MoS₂ films, however, the synthesis of large area MoS₂ films still remains a challenge for practical device development. For the further utilization, existing synthetic approaches that can be used to fabricate large-area MoS₂ films require additional patterning processes, which may introduce unintentional contamination from other chemicals during the various processes. Therefore, it is required to directly prepare patterned, MoS₂ films during the CVD synthesis. In this presentation, we report a simple method for the synthesis of MoS₂ films that can be directly patterned during the synthesis, so that post-patterning processes can be avoided and device fabrication can be made simultaneously. This study suggests that large-area, single-layer MoS₂ films can be synthesized by CVD and directly patterned for atomic-film electronic devices.

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