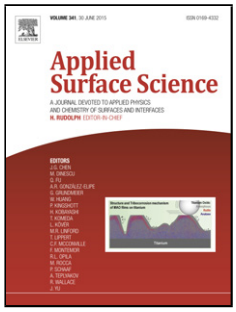

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Anisotropic Growth Mechanism of Tungsten Diselenide Domains using Chemical Vapor Deposition Method

Yoobeen Lee[1], Heekyung Jeong[1], Yi-Seul Park[1], Seulki Han[2], Jaegeun Noh[2], Jin Seok Lee[*,1]

[1]*Department of Chemistry, Sookmyung Women's University, Seoul, 140-742, Korea*

[2]*Department of Chemistry, Hanyang University, Seongdong-gu, Seoul 133-791, Korea*

Author Information

[*]Corresponding author
E-mail Address: jinslee@sookmyung.ac.kr (J.S. Lee)

Highlights

- WSe_2 domains were grown on sapphire substrate by chemical vapor deposition utilizing WO_3 and Se powders as precursors.
- WSe_2 domains was characterized by using Raman spectroscopy, PL, and AFM analysis.
- The kinetic energies of precursors strongly influenced the morphology and size of the WSe_2 domains formed during the growth process.
- Anisotropic morphogenesis and edge terminations of WSe_2 domains were investigated.

Abstract

Anisotropic transition metal dichalcogenide (TMDC) domains have stimulated a growing interest mainly due to their electronic properties that depend on the size, shape, and edge structures of the domains. In this work, we investigated the anisotropic morphogenesis and edge terminations of tungsten diselenide (WSe_2) domains grown on sapphire substrates by chemical vapor deposition (CVD) using tungsten oxide (WO_3) and selenium (Se) powders as