

*Supplementary Material***Direct Growth of Two Dimensional Molybdenum Disulfide on Flexible Ceramic Substrate**Yixiong Zheng^{1,†}, Chunyan Yuan^{1,†}, Sichen Wei¹, Hyun Kim², Fei Yao^{1,*}, Jung-Hun Seo^{1,*}¹ Department of Materials Design and Innovation, University at Buffalo, Buffalo, NY 14260 USA² Component Solution Business Unit, Samsung Electro-Mechanics, Suwon, 16674, Korea

* Correspondence: feiyao@buffalo.edu, junghuns@buffalo.edu

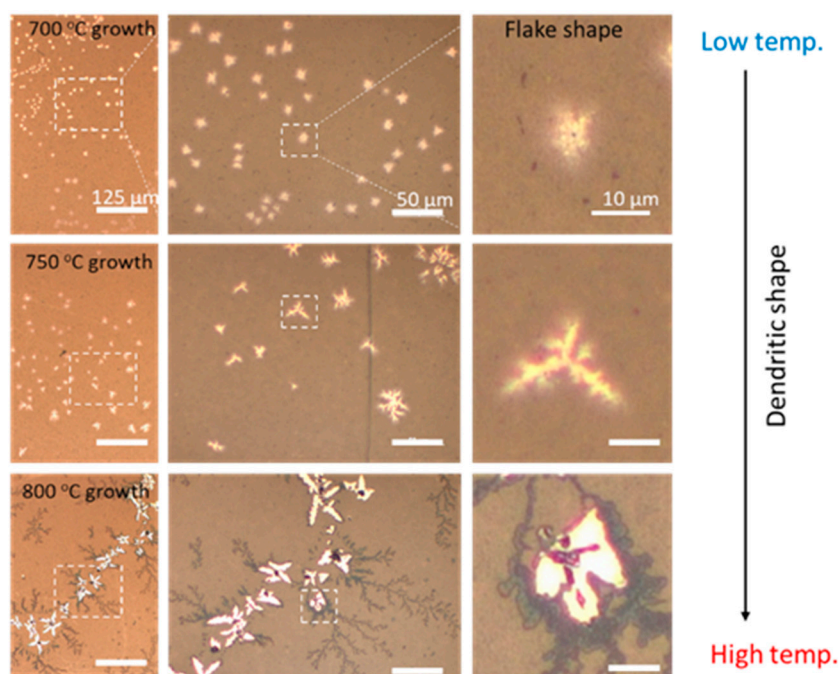


Figure S1. Microscopic images of MoS₂ taken from YSZ substrate under different temperature from 700 °C to 800 °C showing the formation of dendritic shape MoS₂ crystals. The failure of triangular shaped MoS₂ growth was caused by a rough YSZ surface, namely, deep valleys in bare YSZ substrate prevents horizontal nucleation to grow MoS₂ as a 2D format, regardless of growth temperature.

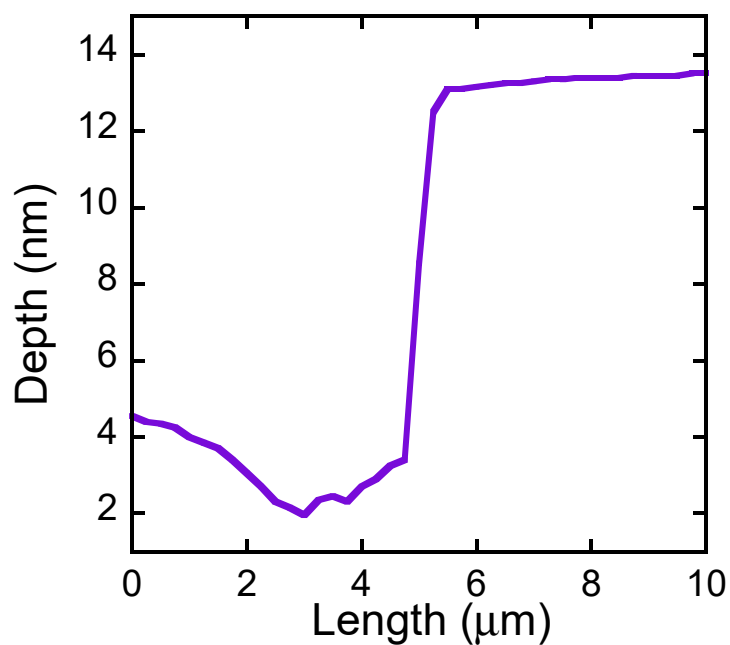


Figure S2. AFM image of few-layered MoS₂ crystal on flexible YSZ substrate to show the height of the typical MoS₂ crystal.

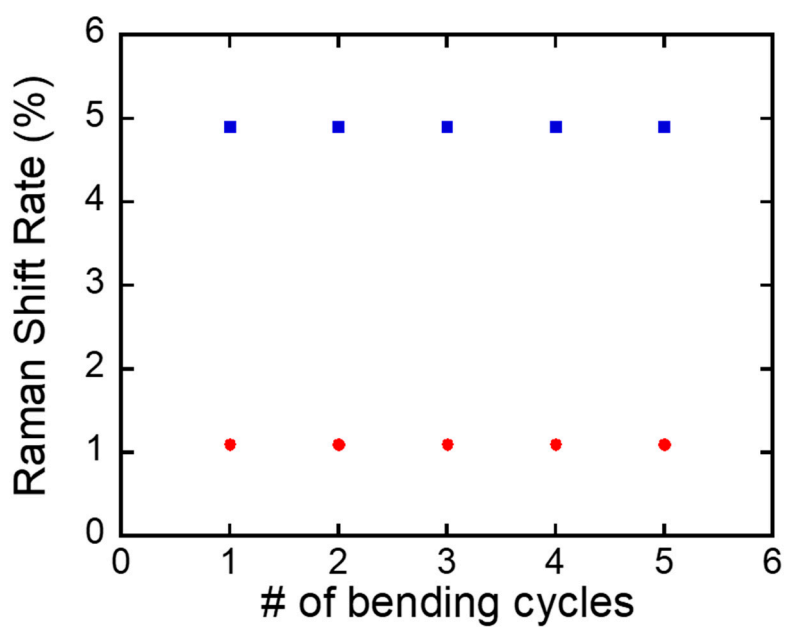


Figure S3. Raman shift rate of E_{2g} and A_{1g} mode peaks as a function of bending cycles up to 5 times, showing a stable shifting rate.