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Synthesis of high quality monolayer WS_2 using chemical vapor deposition.[1] YONG SOO KIM, FARMAN ULLAH, JONG-WON YUN, CHINH TAM LE, Univ of Ulsan, KIM TEAM — Monolayer tungsten dichalcogenide WS_2 have addressed interest from material scientist for new generation of optoelectronics due to thickness dependent optical properties and mechanical flexibility. Continuous monolayers WS_2 were synthesized using chemical vapor deposition (CVD) on various substrates, similar to our previous publication. By controlling growth temperature, we could yield high quality monolayer WS_2. Optical, atomic force microscopic images and Raman scattering indicate that the film was mostly covered by monolayer WS_2 with large grain size about 50 μm. Strong, direct gap emission at 636 nm with relatively small full width at half maxima and the absence of defect-related transitions in power-dependence photoluminescence (PL) revealed the excellent quality of as-grown film in compared with CVD-grown monolayer MoS_2. Moreover, PL intensity and energy mapping at *A*-exciton also shows uniformity and continuity of our films. Our results shows monolayer WS_2 could be potentially applied to optoelectronic devices such as light emission diodes/

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