

Fig. 1 Schematic process flow of the MoS₂ thin film deposition by ALD with MoCl₅ and HMDST as precursors.

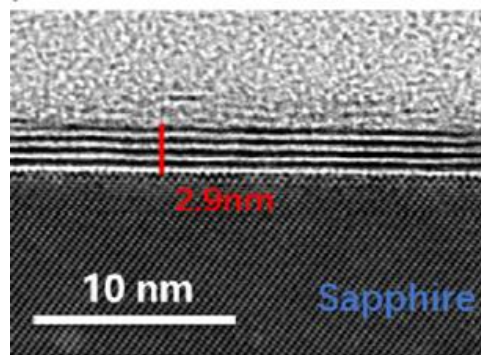


Fig. 2 TEM image showing the ALD-deposited MoS₂ film with layered structure on sapphire substrate.

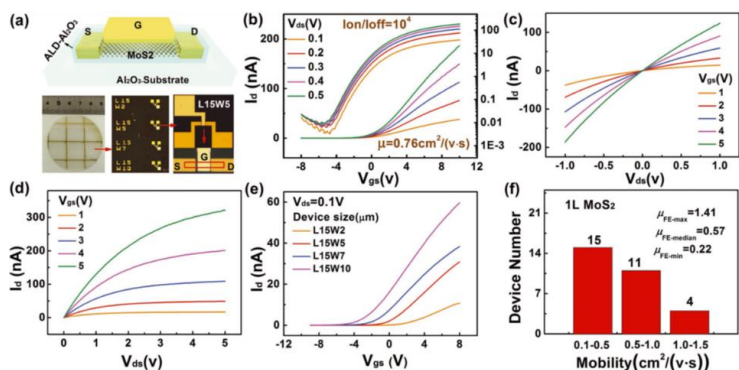


Fig. 3 Electrical characterizations of the FET device arrays fabricated based on the wafer-scale TMD thin film. Good electrical performance and homogeneity have been achieved.

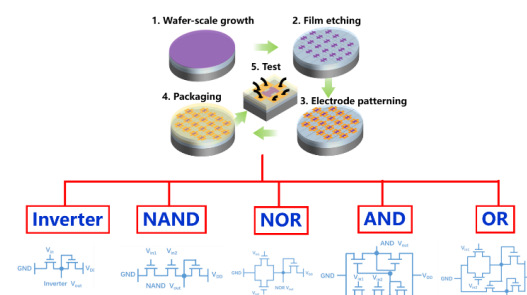


Fig. 4 Large-scale integration process and schematic of simple logics to be implemented with the TMD thin film.

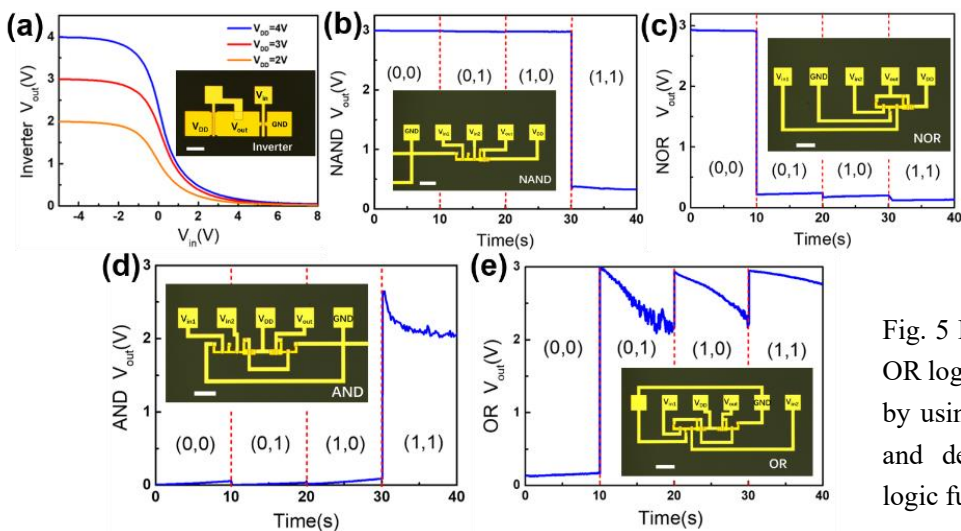


Fig. 5 Inverter, NAND, NOR, AND, and OR logic gates which have been achieved by using the wafer-scale TMD thin film and device integration process. Good logic functions have been realized.