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High mobility field effect transistors of SnO_x on glass substrates made by reactive sputtering of Sn metal CHANJONG JU, CHULKWON PARK, HYEONSEOK YANG, USEONG KIM, YOUNG MO KIM, KOOKRIN CHAR, Seoul National University — We report on the electrical properties of SnO_x thin films and the performance of their field effect transistors on glass substrates made by reactive sputtering of a Sn metal target. We investigated the electrical properties of SnO_x films as a function of the oxygen pressure. The mobility of the SnO_x films on glass substrates after post-deposition annealing at 400 C was as high as 15.3 cm²/Vs while its carrier density was 4.42×10^{18} cm⁻³. By x-ray diffraction, we have found that the films are mixture of SnO and SnO₂ phases, suggesting possibility of further enhancement of the electrical properties if the phase can be controlled. Nevertheless, we will report on the performance of thin film transistors using polycrystalline SnO_x as the channel layer and the atomic-layer-deposited AlO_x and HfO_x as the gate oxide.

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