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Fabrication of MOS-Transistor Containing Nanocrystalline Silicon and Investigation of the Electrical Properties.

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We fabricated MOS-transistors with a channel thickness of 45nm containing nanocrystalline silicon and investigated the electrical properties. The insulating oxide was grown by the dry oxidation technique. A-Si layer was deposited on the oxide layer by plasma enhanced chemical vapor deposition, then it was annealed subsequently at N₂ ambient at various temperatures from 700°C to 1000°C. We investigated the crystallinity of the annealed layer by using XRD. Usual silicon processes were employed for fabricating the transistor. The annealed Si layer was used as an active region, such as channel and source/drain in the transistor. In this poster, the electrical properties of MOSFET containing nanocrystalline silicon channel will be presented.