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**The measurements of thermopower and thermal conductivity of an $In_2O_3$ nanowire through a general purpose template** MIN-NAN OU, PING-CHUNG LEE, CHENG-LUNG CHEN, Institute of Physics, Academia Sinica, CHIEN-LIN HUNG, LI-JEN CHOU, Materials Science and Engineering, NTHU, YANG-YUAN CHEN, Institute of Physics, Academia Sinica — In order to study the electron-phonon transport properties in a single nanowire for various materials, a platform of $Si/Si_3N_4$ for the purpose was designed to perform the measurements of thermal power and thermal conductivity simultaneously. A single $In_2O_3$ nanowire was placed on the platform by manipulation probes and carefully examined. A sagging structure of $In_2O_3$ nanowire was prepared by E-beam lithographic and reactive ion etching techniques. The $In_2O_3$ nanowire with length of 30 $\mu$m and diameter of 100 nm was revealed by SEM images, The resistivity measured using four-probe method indicated a semiconducting like behavior in the range temperature from 10 K to 300 K with room-temperature resistivity about 2.17 m$\Omega$-cm at 300 K. Meanwhile, the thermopower and the thermal conductivity of $In_2O_3$ nanowire measured by steady state and self-heating $3\omega$ method respectively are also obtained and was discussed in details.

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