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Seed layer-assisted fabrication of $KNbO_3$ nanowires on Cu foil

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Abstract

We demonstrated the fabrication of a cost-effective nanogenerator based on ferroelectric $KNbO_3$ nanowires grown on a seed layer/Cu foil via a hydrothermal process. We controlled the concentration of both KOH and Nb_2O_5 precursor solutions in order to manipulate the width and length of the $KNbO_3$ nanowires grown on the seed layer/Cu foil. We found that our $KNbO_3$/Cu-based nanogenerator can produce sensing voltages up to 100 mV under an applied force as low as 0.8 N. Even at an extremely low force, our nanogenerator generates a sensing voltage, which can be used to charge implantable devices inside human bodies.

Keywords*:* nanowires, $KNbO_3$, copper foil, sensing voltage, nanogenerator