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# Direct observation of spontaneous polarization induced electron charge transfer in stressed ZnO nanorods

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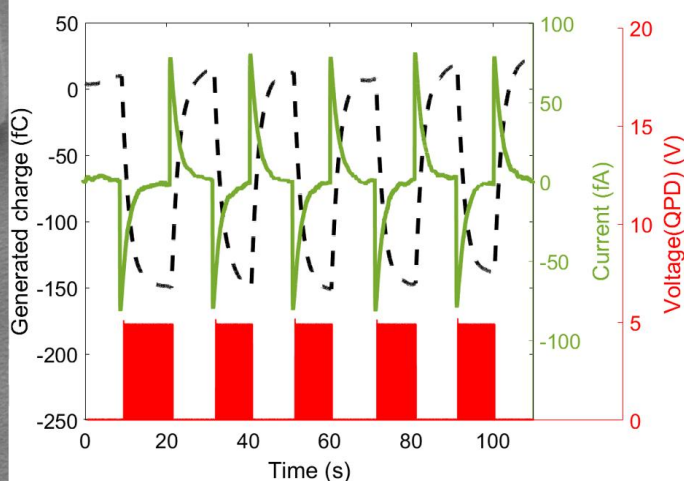
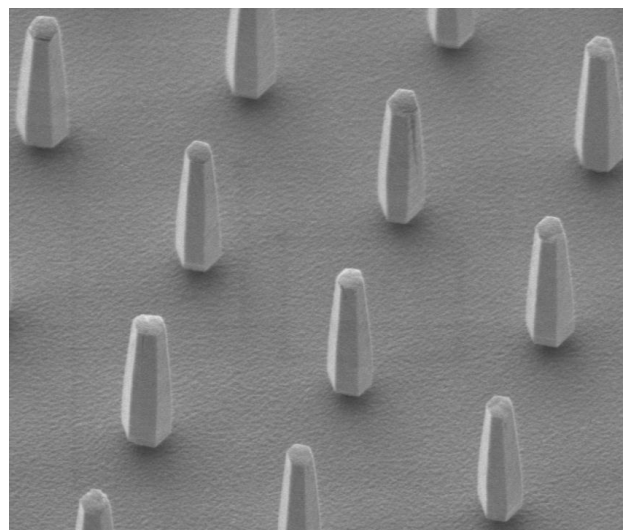
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## Abstract

We report here a theoretical and experimental study of the charge generated when a ZnO nanorod is subjected to external force and contacting on a timescale of order seconds. We show, for the samples considered, that the measured charge flow is over four orders of magnitude larger than expected based on the strain-induced piezoelectric response, and is comparable in magnitude to the spontaneous charge on the surface of an ideal nanorod. We present a defect-mediated electrostatic model to explain how the measured charge transfer can arise from the nanorod spontaneous polarization induced electron charge.

## Graphical Abstract



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**Keywords:** ZnO; nanowire; nanorod; piezoelectricity; spontaneous polarization; pressure sensor

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