Pathway to the Piezoelectronic Transduction Logic Device

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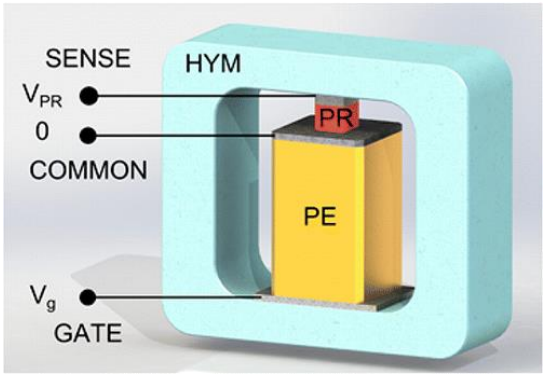

The piezoelectronic transistor (PET) has been proposed as a transduction device not subject to the voltage limits of field-effect transistors. The PET transduces voltage to stress, activating a facile insulator–metal transition, thereby achieving multigigahertz switching speeds, as predicted by modeling, at lower power than the comparable generation field effect transistor (FET). Here, the fabrication and measurement of the first physical PET devices are reported, showing both on/off switching and cycling. The results demonstrate the realization of a stress-based transduction principle, representing the early steps on a developmental pathway to PET technology with potential to contribute to the IT industry.