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## Fabrication of InAs/AlSb/GaSb TFETs by using HSQ as a mechanical support

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We examined room temperature band-to-band tunneling in 2D InAs/3D GaSb heterostructures. Specifically, multi-subband, gate-controlled negative differential resistance is observed in InAs/AlSb/GaSb junctions. Due to spatial confinement in the 10nm-thick InAs layer, tunneling contributions from two distinct subbands are observed as sharp steps in the current-voltage characteristics. It is shown that the relative position of the steps can be controlled via external gate bias. Additionally, the extracted separation in the subband energy agrees well with the calculated values. This is the first demonstration of a gate controlled tunneling diode with multiple subband contributions. By further improving the fabrication techniques, InAs/AlSb/GaSb FET is for the first time demonstrated. Device analysis indicates that Dit plays an important role on device performances and the experimental result clarifies the role of the tunneling junction width with respect to the gate width.

### Biography

Yuping Zeng has completed her PhD in 2011 from Swiss Federal Institute of Technology and has been doing her Postdoctoral studies from University of California at Berkeley. She is the lead of the III-V TFET project and XO1 MOSFET project. She has published more than 20 papers in reputed journals and more than 10 conference papers and has been serving as referees for some journals (e.g. *Applied Physics Letters*, *IEEE Electron Device Letters*, *IEE Electronic Letters*, etc).

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