## **Supporting Information**

## Laser Induced Photothermal Effect in InAs Nanowire: Tuning Hole Density

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**Figure S1**: Raman spectra (symbols) at different laser powers (indicated in the graph) are fitted with multiple Lorentzian functions. The red line is the result of multi- Lorentzian fit. The blue, magenta and green lines correspond to TO, SO and LO phonon modes, respectively. The shaded peaks correspond to CPLP mode.



**Figure S2**: Integrated intensity of the Raman modes of  $In_2O_3$  at 108 and 134 cm<sup>-1</sup> as a function of laser power.



**Figure S3**: Raman spectra (symbols) at different laser powers (indicated in the graph) taken in vacuum (10<sup>-3</sup> mbar) are fitted with multiple Lorentzian functions. The red line is the result of multi- Lorentzian fit. The blue, magenta and green lines correspond to TO, SO and LO phonon modes, respectively