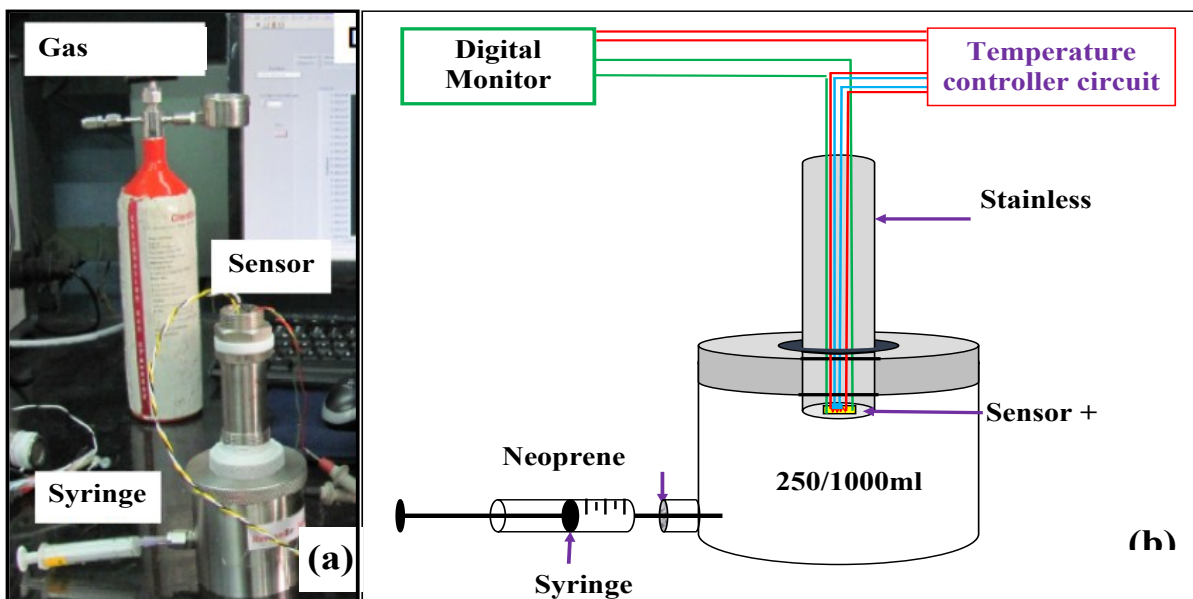


Supplementary Information-I

H₂S gas sensing measurements were performed on the films using actual gas sensing set-up at left and its schematic at right is shown below.



Supplementary Information-II

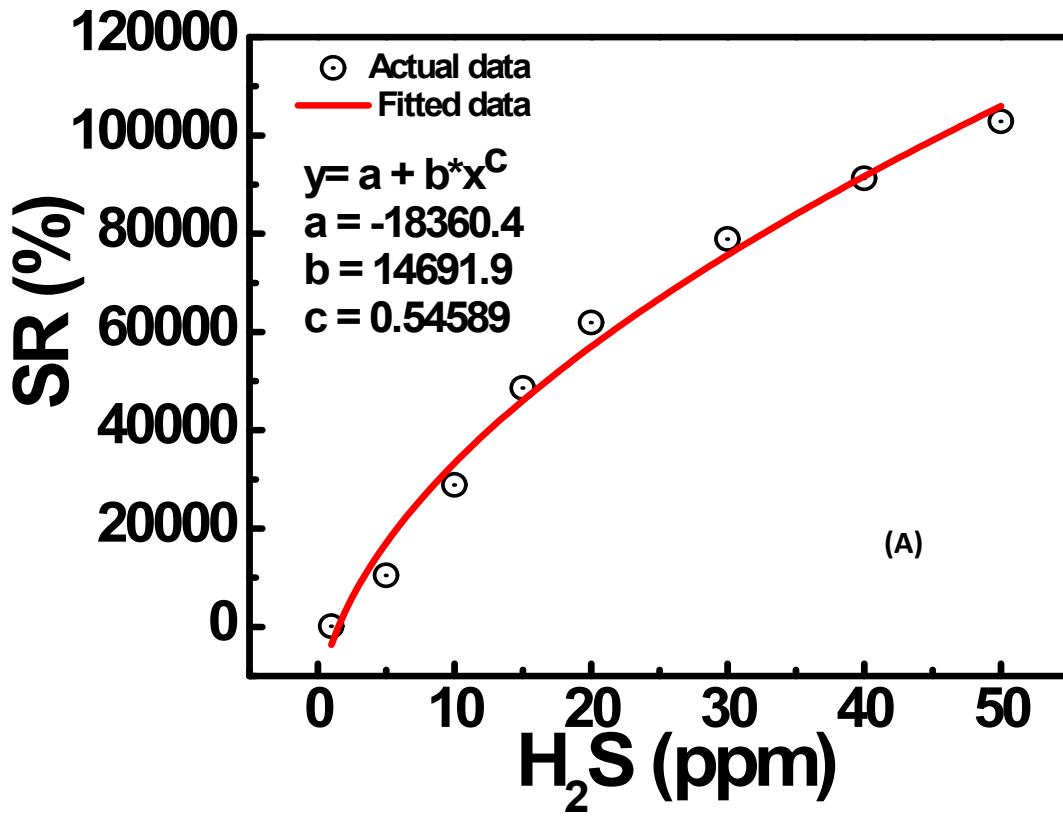
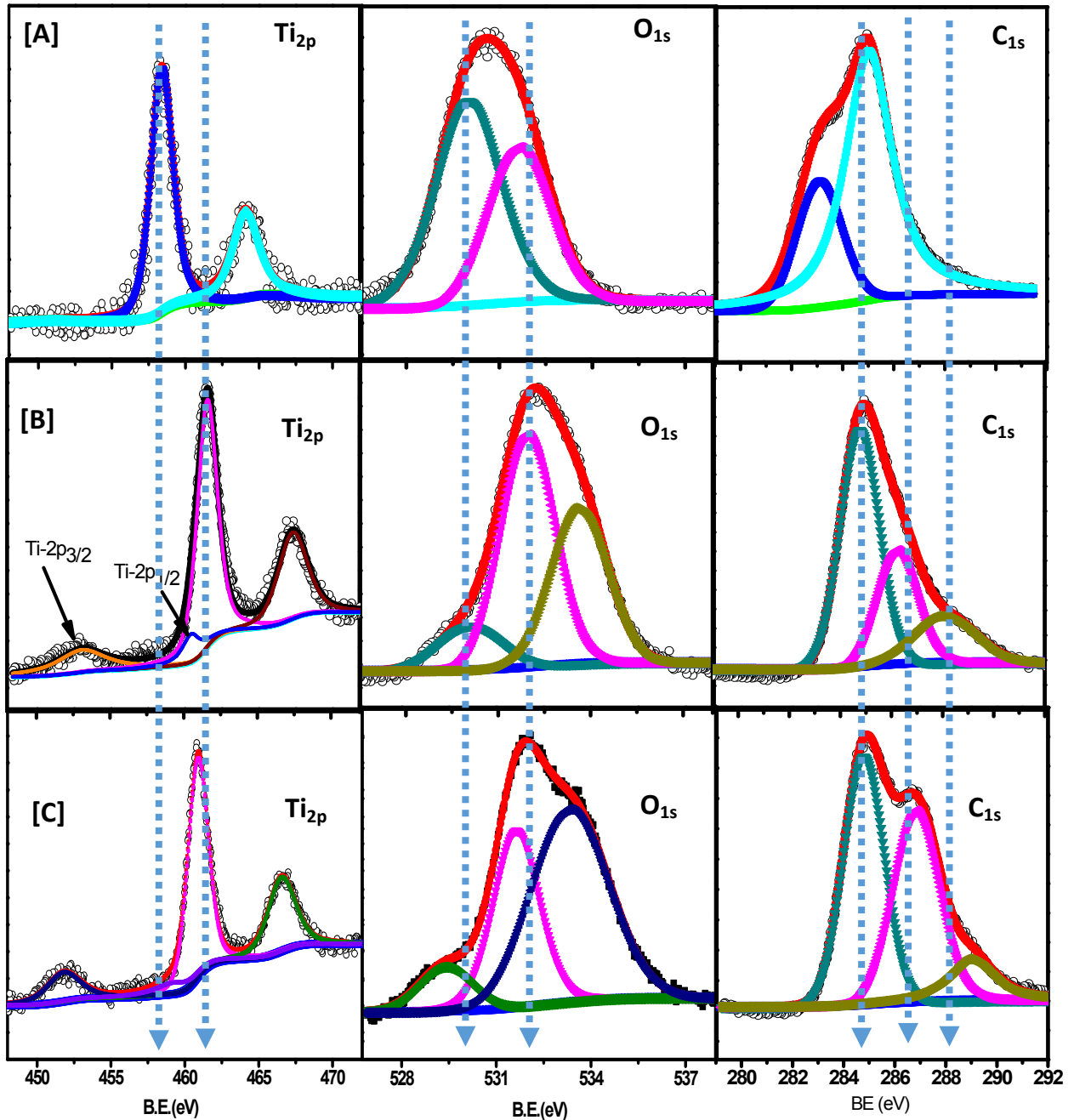


Figure [A]: Fitted H₂S sensing data of Ti/TiOx film using Elovich adsorption model

Supplementary information-III

X-ray Photo-electron Spectroscopy (XPS) data of films prepared using [A] 200 mJ [B] 500 mJ and [C] 680 mJ laser energy shown below

The XPS data for film prepared using 680 mJ is almost similar to 500 mJ sample except with diminishing intensity of deconvoluted O1s peak at ~ 532 eV indicating reduction in the proportion of chemisorbed oxygen that has been reflected sensor response. The XPS carbon is fitted at reference energy of 285 eV and peaks those are before 285 eV are mono-oxides of carbon and after 285 eV are di-oxides of carbon.



Supplementary Information IV

Synchrotron X-ray Absorption Spectroscopy (XAS) data of films prepared using different laser energy. Figure [A] shows Ti L-edge and [B] O K-edge spectra. The spectra appears to be almost same for the samples prepared using 500 mJ and 680 mJ laser energies.

