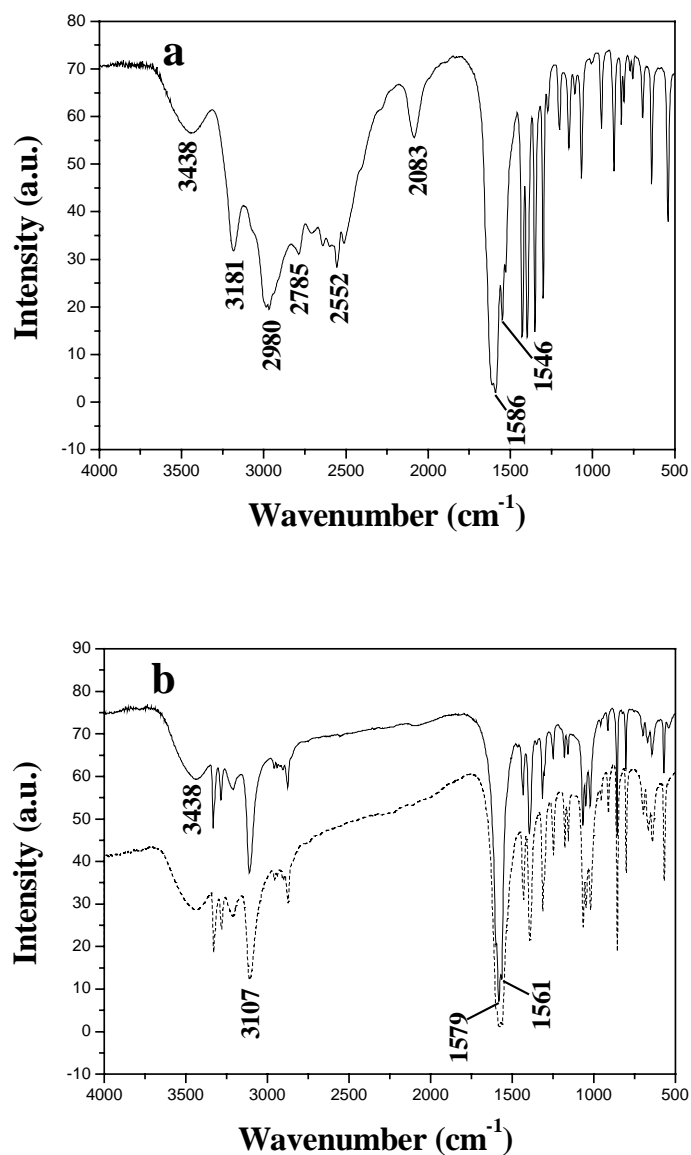


## Supporting Information

### L-cysteine-assisted Tunable Synthesis of PbS Various Morphologies



**Figure 1.** FTIR spectra of (a) pure cysteine and (b) intermediates, including products with different reaction time. Black solid line : 30 min; Black dash line: 1 h.

The analyses of FTIR also demonstrate that the likely chemical structure of the precursor nanowires is  $\text{HSCH}_2\text{CH}(\text{NH}_2)\text{COO-Pb-OH}$  in comparison with the IR spectrum of pure cysteine. In the current of a weakly basic condition, such as ethanolamine, which supplies  $\text{OH}^-$  ions, the proton of the  $\text{COOH}$  group is removed and  $\text{Pb}^{2+}$  ions could react with cysteine to form the precursor. Direct evidence for the hypothesis requires further study and the work is under way.