Electronic Supplementary Material (ESI) for Journal of Materials Chemistry C. This journal is © The Royal Society of Chemistry 2014

## **Supporting information**

## The structure and amorphization of germanane

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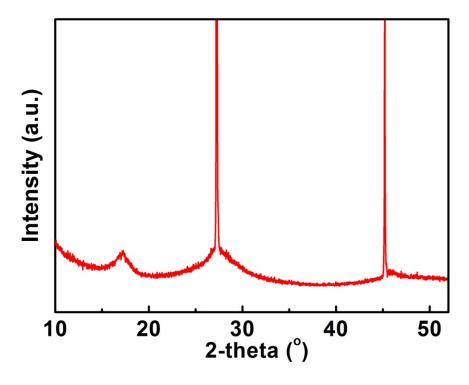
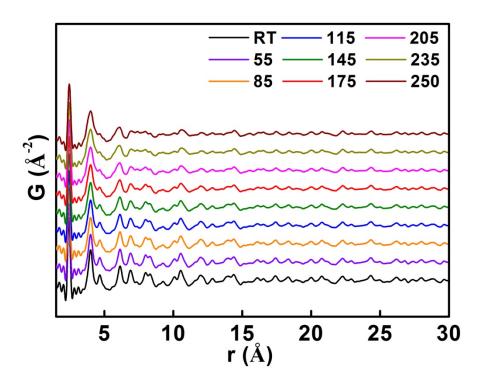


Fig. S1 Flat plate XRD of germanane annealed at 175 °C.



**Fig. S2** PDF of GeH at different temperatures with slight offset to show the features in PDF more clearly.

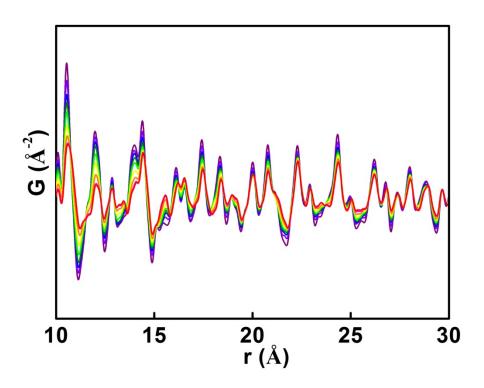
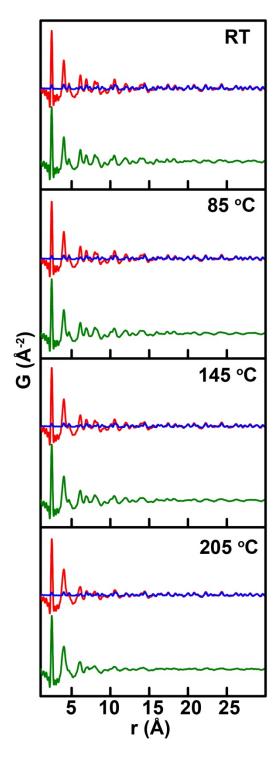
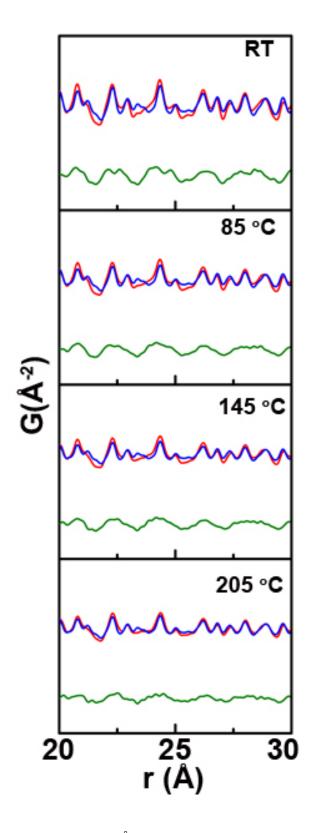


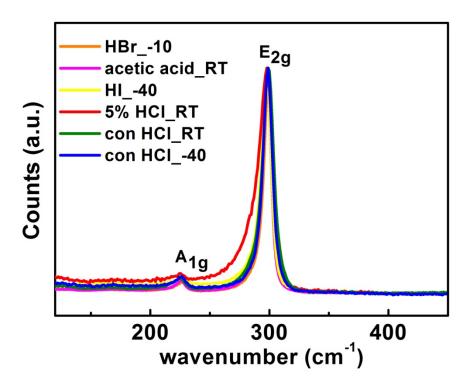
Fig. S3 Superimposed PDF of GeH at different temperatures with at the range of 10--30~Å.



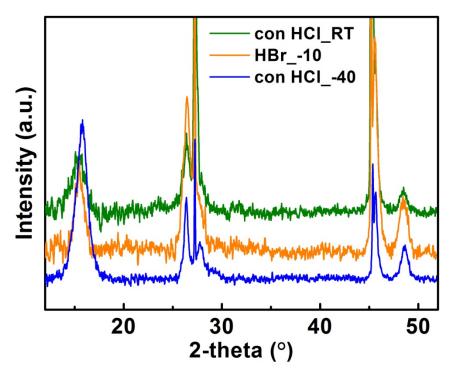
**Fig. S4** PDF of GeH (red) at different temperatures with scaled PDF of Ge (blue) that match the intensity of the high-r features above 28 Å. The difference curves (green) of them are also plotted.



**Fig. S5** Zoom in at 20-30 Å of Fig. S4 data. The PDF of GeH (red) at different temperatures with scaled PDF of Ge (blue) that match the intensity of the high-r features above 28 Å. The difference curves (green) of them are also plotted.



**Fig. S6** Raman spectra of different GeH samples synthesized with various acids, under different conditions.



**Fig. S7** XRD of different GeH samples synthesized with various acids, under different conditions.