

Blue-emission of Ge nanocrystals prepared by thermal decomposition

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We report here a simple synthesis method for monodisperse Ge nanocrystals by thermal decomposition of precursor TOG at 360°C, which is obtained by an reaction of GeCl₄ with oleylamine at room temperature. The effect of refluxing time on the average dimension of Ge nanocrystals was discussed. Fundamental characterizations including HRTEM and XRD were performed on these Ge nanocrystals. FTIR, DSC and TG were used to explain the mechanism of formation Ge nanocrystals by thermal decomposition of TOG. Ge nanocrystals with average grain sizes clearly exhibit blue emission, which might be resulted from the hydrocarbon absorbed on the surface Ge nanocrystals, the amorphous oxide layer on the surface of Ge nanocrystals and/or defects in Ge nanocrystals.

References

- [1] H.P. Wu, M.Y. Ge, C.W. Yao, Y.W. Wang, Y.W. Zeng, L.N. Wang, G.Q. Zhang and J.Z. Jiang, *Nanotechnology* 17, 5339 (2006).