Lizhe Liu

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Education — Nanjing University

- Sept. 2014～present **Nanjing University** **Associate Professor**
- Sept. 2011～June 2014 **Nanjing University** **Postdoctoral Researcher**
- Sept. 2008～June 2011 **Nanjing University** **Doctor of Science degree in Physics**
- Sept. 2005～June 2008 **Hebei Normal University** **Master of Science degree in Physics**

Research Experience — Advisor: Prof. Xinglong Wu

1. **Raman scattering in semiconductor nanostructure**
   a) Explored the new growth mechanism in nanostructure
   b) Investigated the phonon behavior in different nanostructure by Raman scattering
   c) Calculated the Raman spectra by density functional theory
2. **Photoluminescence in semiconductor nanostructure**
   a) Analyzed the photoluminescence spectra of nanostructure
   b) Confirmed the experimental conclusion by calculated density of state

Skills

a) Familiar with the TEM, SEM, XRD, Photoluminescence spectra and Raman spectra measurements and their data analyses
b) Familiar with the following software: vasp, lamps, Materials Studio, Matlab, Origin, Fortran
c) Strong logical and analytical ability in problem solving

Scholarship and Honors

- 2009: Y. M. Gao Scholarship (Nanjing University)
- 2010: Nanjing National Laboratory of Microstructure Scholarship, (Nanjing University)
- 2010: Outstanding Graduate Students, (Nanjing University)
- 2011: AMD Scholarship (Nanjing University)

Publications

1. **L. Z. Liu**, G. S. Huang, L. L. Wang, T. H. Li, and X. L. Wu, Ordered amorphous silicon nanoisland arrays and reflection spectral dependence on nanoisland geometrical parameters, ***Appl. Phys. Lett.*** **94**, 151903 (2009).
2. **L. Z. Liu**, X. L. Wu, Z. Y. Zhang, T. H. Li, and Paul K. Chu, Surface-polarization-induced formation of amorphous foliaceous SiO_2 helical nanobelts, ***Appl. Phys. Lett.*** **94**, 253110 (2009).
3. **L. Z. Liu**, X. L. Wu, Z. Y. Zhang, T. H. Li, and Paul K. Chu, Raman investigation of oxidation mechanism of silicon nanowires, ***Appl. Phys. Lett.*** **95**, 093109 (2009).
4. **L. Z. Liu**, F. Gao, X. L. Wu, T. H. Li, and Paul K. Chu, Influence of GeSi interfacial layer on Ge-Ge optical phonon mode in SiO_2 films embedded with Ge nanocrystals, ***Appl. Phys. Lett.*** **95**, 171105 (2009).
5. **L. Z. Liu**, X. L. Wu, T. H. Li, and Paul K. Chu, Twinning $Ge_{0.54}Si_{0.46}$ Nanocrystal Growth Mechanism in Amorphous SiO_2 films, ***Appl. Phys. Lett.*** **96**, 173111 (2010).
6. **L. Z. Liu**, X. L. Wu, F. Gao, Y. M. Yang, T. H. Li, and Paul K. Chu, Size-independent low-frequency Raman modes in Ge-nanocrystal-embedded SiO_2 films, ***Opt. Lett.*** **35**, 1022 (2010).
7. **L. Z. Liu**, X. L. Wu, J. C. Shen, T. H. Li, F. Gao, and Paul K. Chu, Identification of local silicon cluster nanostructures inside Si_xGe_{1-x} alloy nanocrystals by Raman spectroscopy, ***Chem. Commun.*** **46**, 5539 (2010).

8. **L. Z. Liu,** J. Wang, X. L. Wu, T. H. Li, and Paul K. Chu, Longitudinal optical phonon–plasmon coupling in luminescent 3C–SiC nanocrystal films, *Opt. Lett.* **35**, 4024 (2010).
9. **L. Z. Liu**, X. X. Li, X. L. Wu, X. T. Chen, and Paul K. Chu, Growth of tin oxide nanorods induced by nanocube-oriented coalescence mechanism, ***Appl. Phys. Lett.* 98**, 133102 (2011).
10. **L. Z. Liu**, X. L. Wu, T. H. Li, S. J. Xiong, X. T. Chen, and Paul K. Chu, Morphology-dependent low-frequency Raman scattering in ultrathin spherical, cubic, and cuboid SnO_2 nanocrystals, ***Appl. Phys. Lett.* 99**, 251902 (2011).
11. **L. Z. Liu,** X. L. Wu, J. Q. Xu, T. H. Li, and Paul K. Chu, Oxygen-vacancy and depth-dependent violet double-peak photoluminescence from ultrathin cuboid SnO_2 nanocrystals, ***Appl. Phys. Lett.* 100,** 121903 (2012).
12. **L. Z. Liu**, W. Xu, X. L. Wu, Y. Y. Zhang, T. H. Chen, and Paul K. Chu, Electronic states and photoluminescence of TiO_2 nanotubes with adsorbed surface oxygen, **Appl. Phys. Lett. 100**, 121904 (2012).
13. **L. Z. Liu**, T. H. Li, X. L. Wu, J. C. Shen, and Paul K. Chu, Identification of oxygen vacancy types from Raman spectra of SnO_2 nanocrystals, **J. Raman. Spectrosc. 43**, 1423 (2012).
14. **L. Z. Liu**, X. L. Wu, X. X. Liu, J. C. Shen, T. H. Li, and Paul K. Chu, Electronic structure and optical properties of β-$FeSi_2$(100)/Si(001) interface at high pressure, **Appl. Phys. Lett. 101**, 111909 (2012).
15. **L. Z. Liu**, J. Q. Xu, X. L. Wu, T. H. Li, J. C. Shen, and Paul K. Chu, Optical identification of oxygen vacancy types in SnO_2 nanocrystals, **Appl. Phys. Lett. 102**, 031916 (2013).