

The Purpose of Today's Visit

Communication
Cooperation
Creation



Competition



Raman Application in Material Science

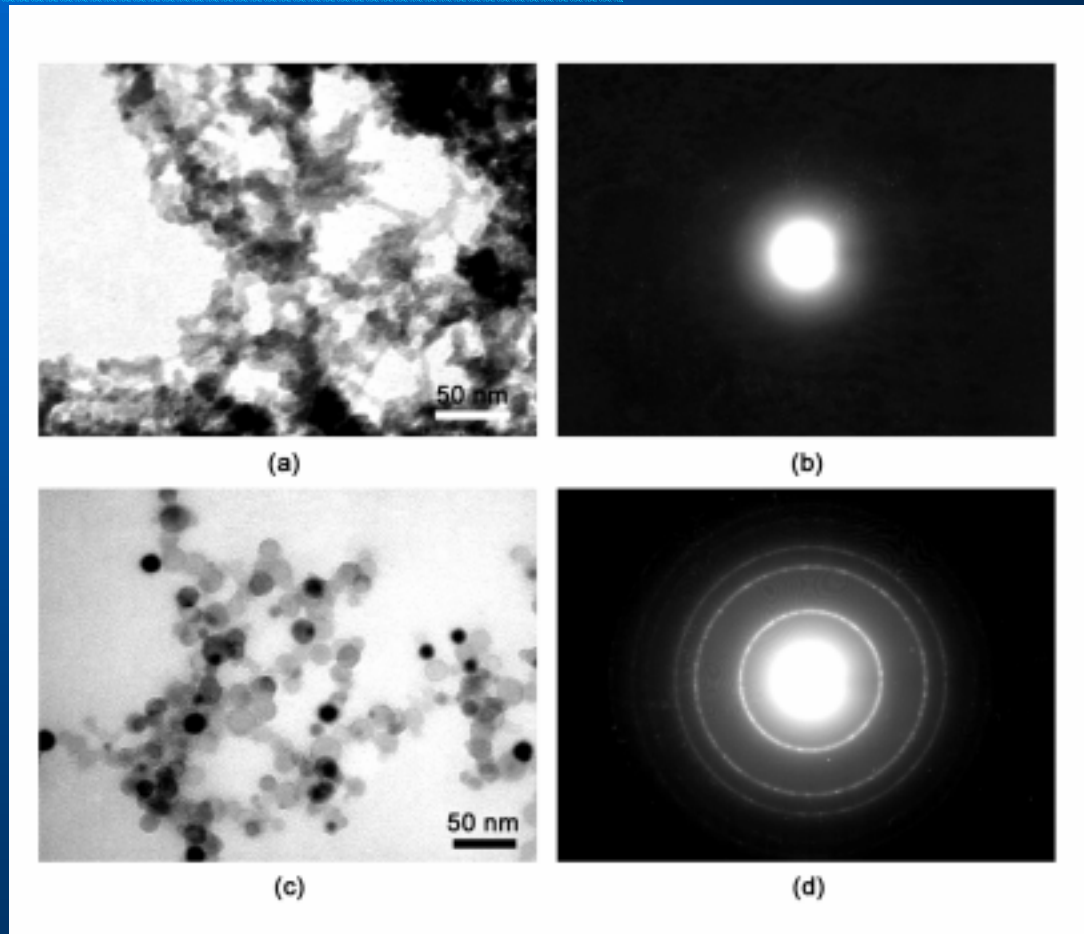
國立台灣師範大學物理系
賈至達



- C.V. Raman
- 1928
- Nobel Price (1930)



Spherical Si Quantum Dots

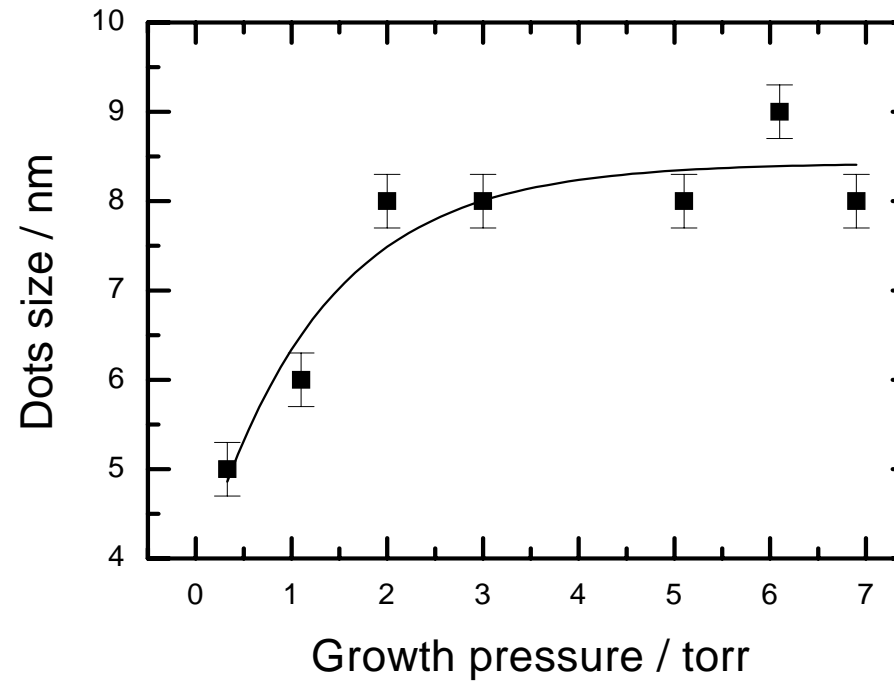
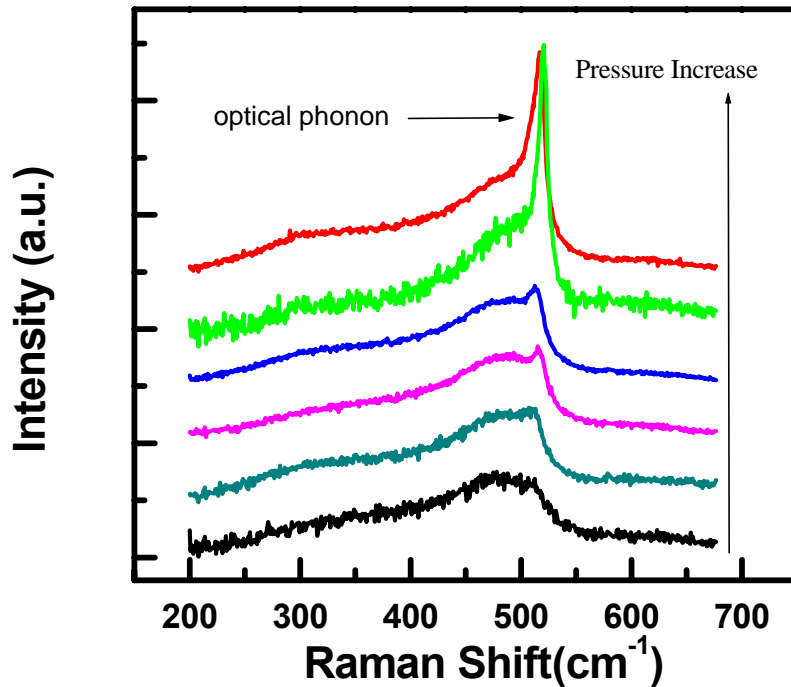


Y-C Liao, S-Y Lin, S-S Lee and C-T Chia, Appl. Phys. Lett. 77, 4328 (2000).
C-W Lin, S-Yen Lin, S-C Lee and C-T Chia, J. of Appl. Phys. 91, 1525 (2002).

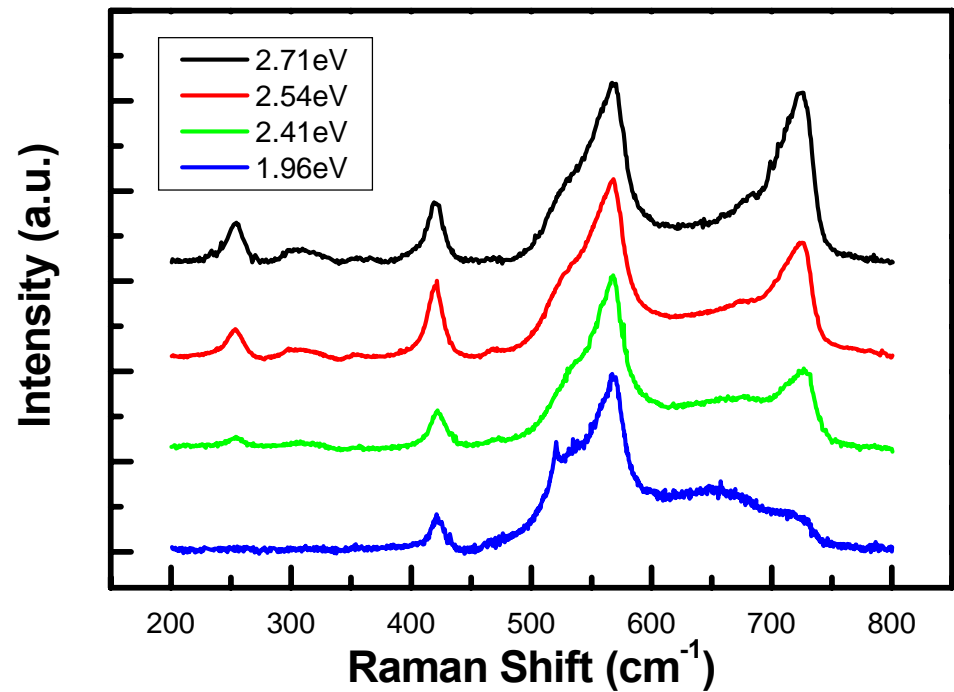
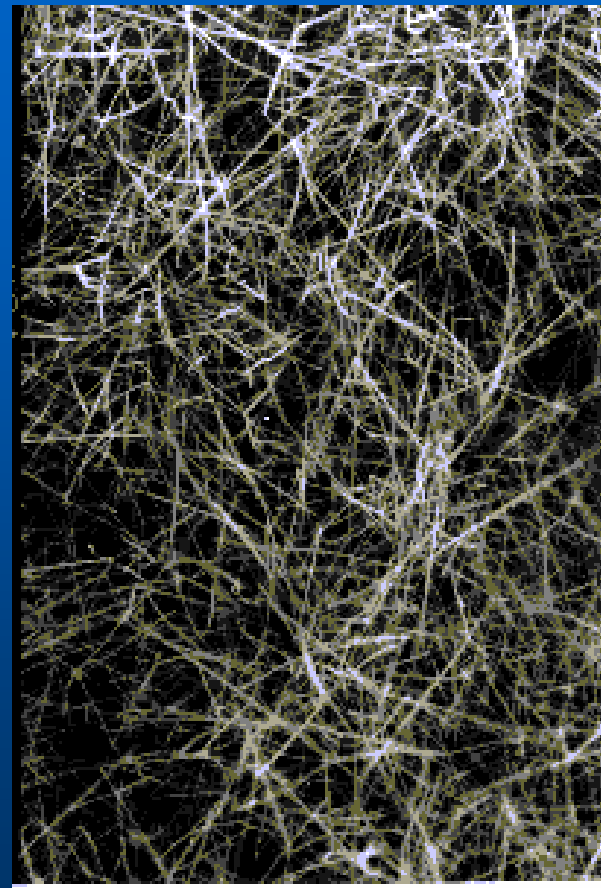


Raman Study of Si Dots' Size

Thermal Evaporation Growth Si Dots

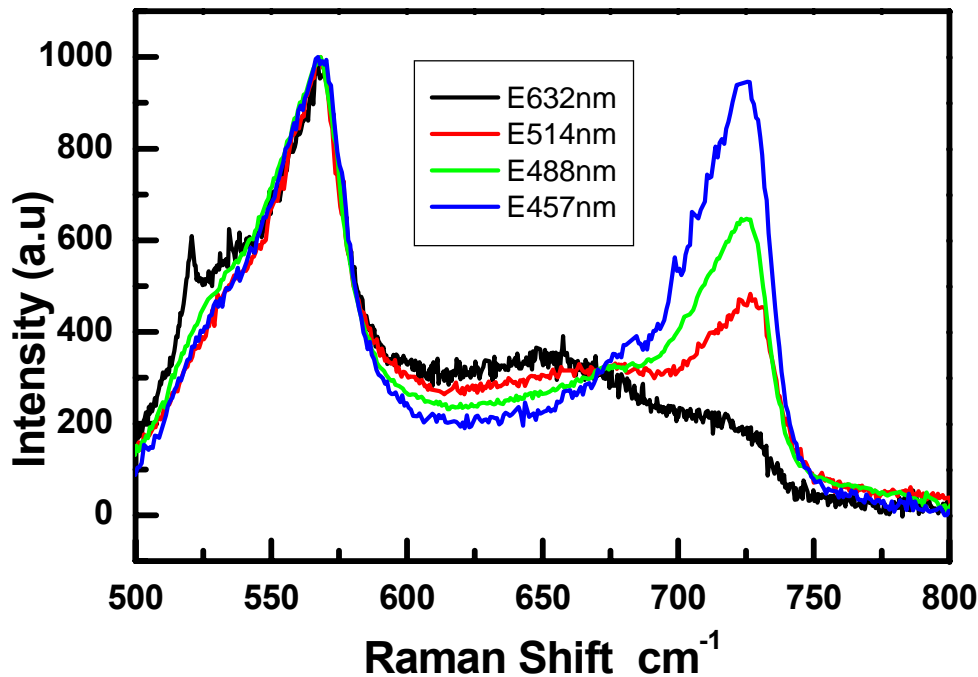


Raman Spectra of GaN Wire

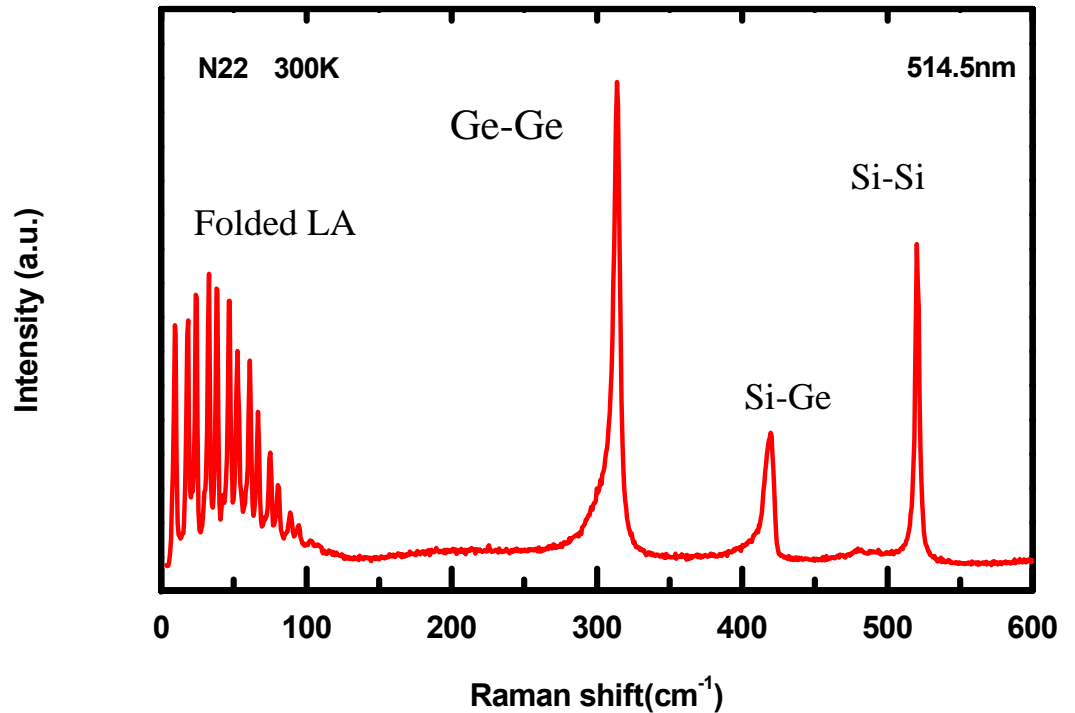
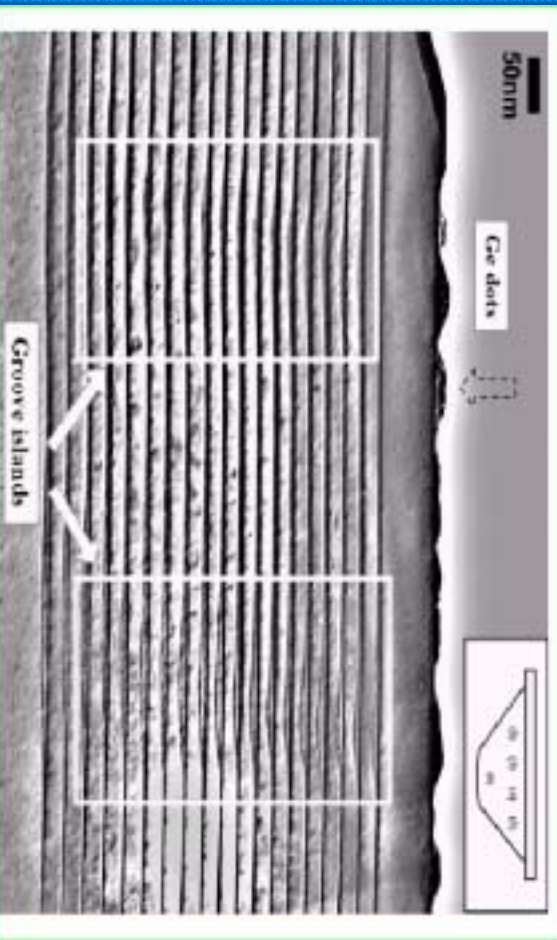


LO-Phonon and Plasma Coupling

$$I(\omega) = \int_0^{q_{\max}} dq F(q) \cdot q^2 S(\omega, q) \operatorname{Im} \left(\frac{1}{\varepsilon(\omega, q)} \right)$$

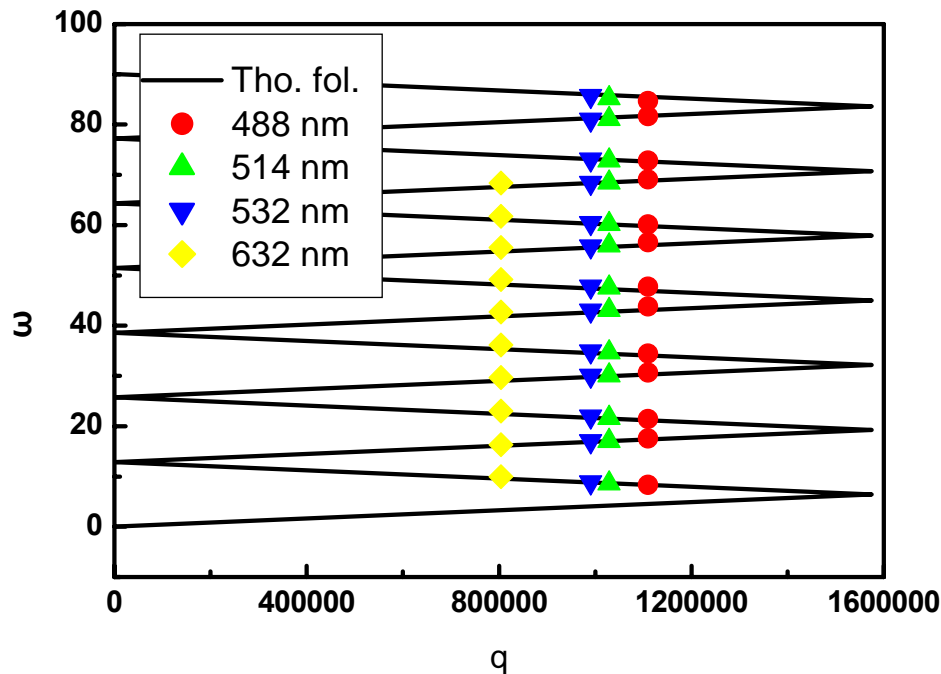


Ge/Si MBE-Grown Superlattice



Thickness of Ge and Si layer

Rytov theory



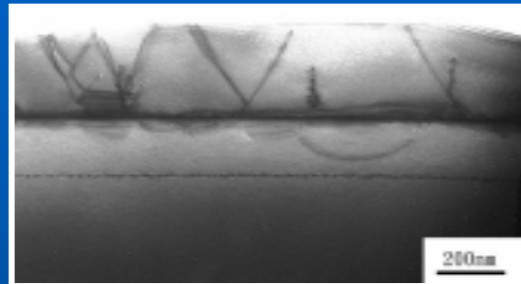
$$\omega = V_{SL} \left(\frac{2\pi m}{d} \pm q \right)$$



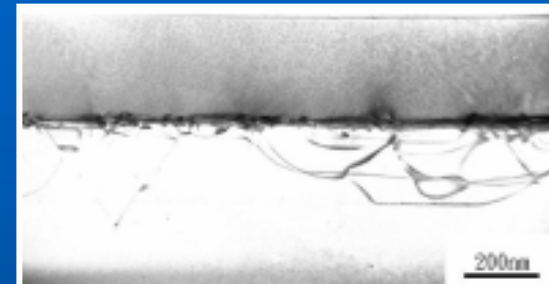
MBE Grown Relaxed SiGe alloy



LT-Si 600 °C (# 319)



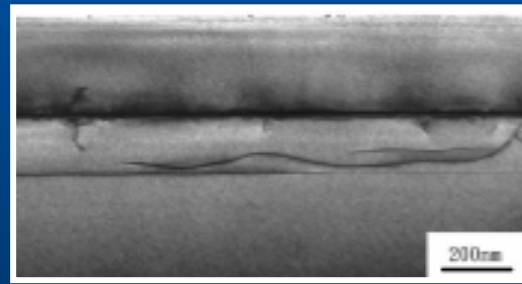
LT-Si 550 °C (# 320)



LT-Si 500 °C (# 323)



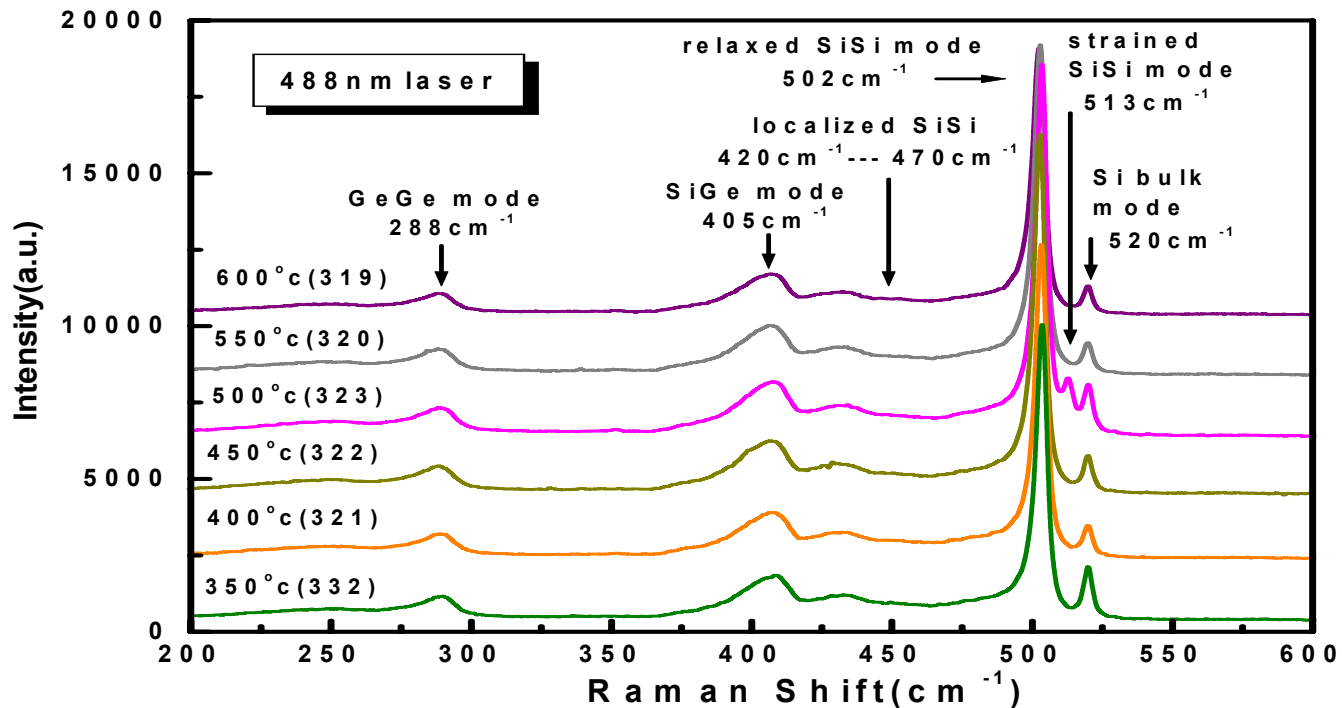
LT-Si 450 °C (# 322)



LT-Si 400 °C (# 321)

TEM圖由台大凝態中心
鄭鴻祥教授提供

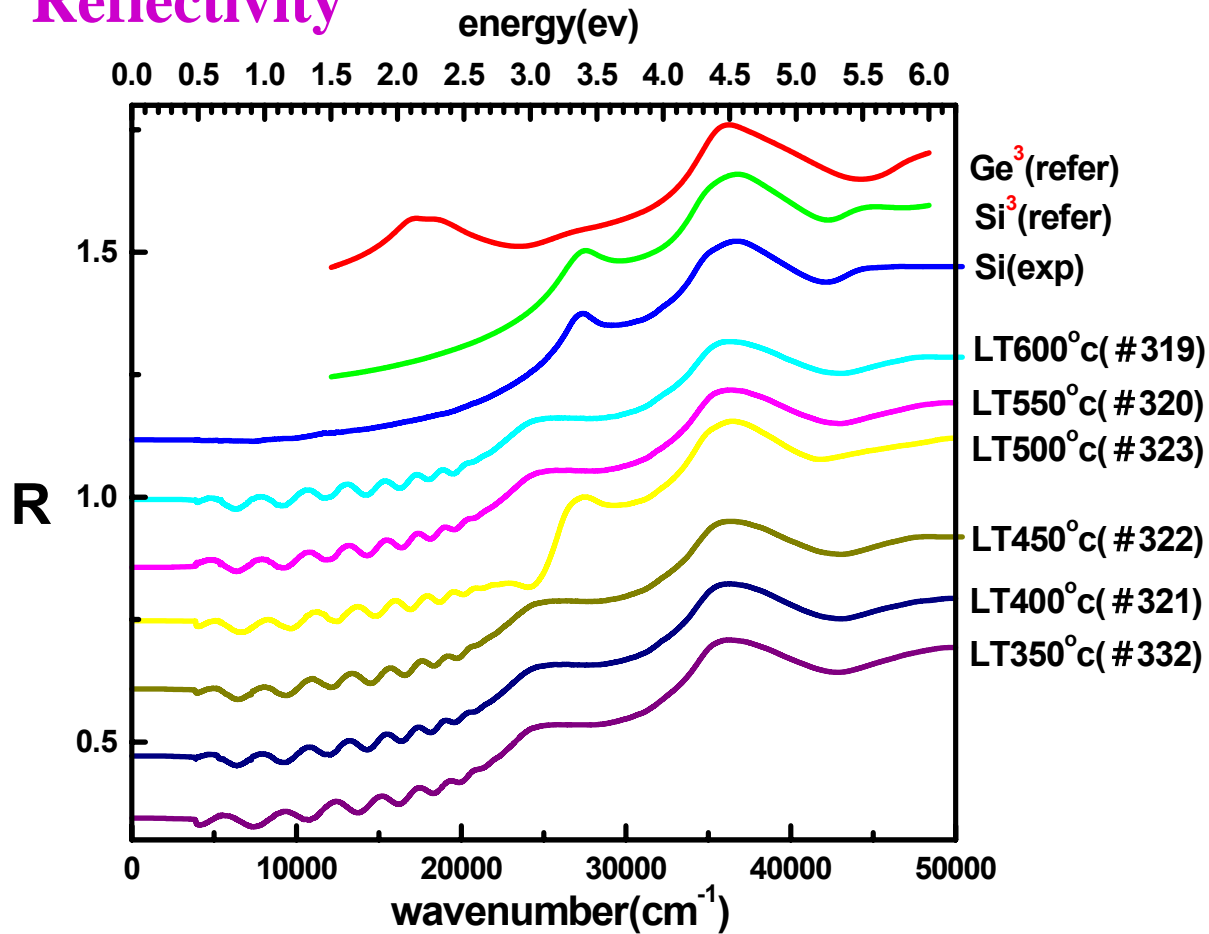




	457nm		488nm		514nm	
sample	x	(%)	x	(%)	x	(%)
# 323 (LT500°C	0.17 ± 0.03	-0.36 ± 0.06	0.17 ± 0.03	-0.36 ± 0.03	0.16 ± 0.03	-0.37 ± 0.03



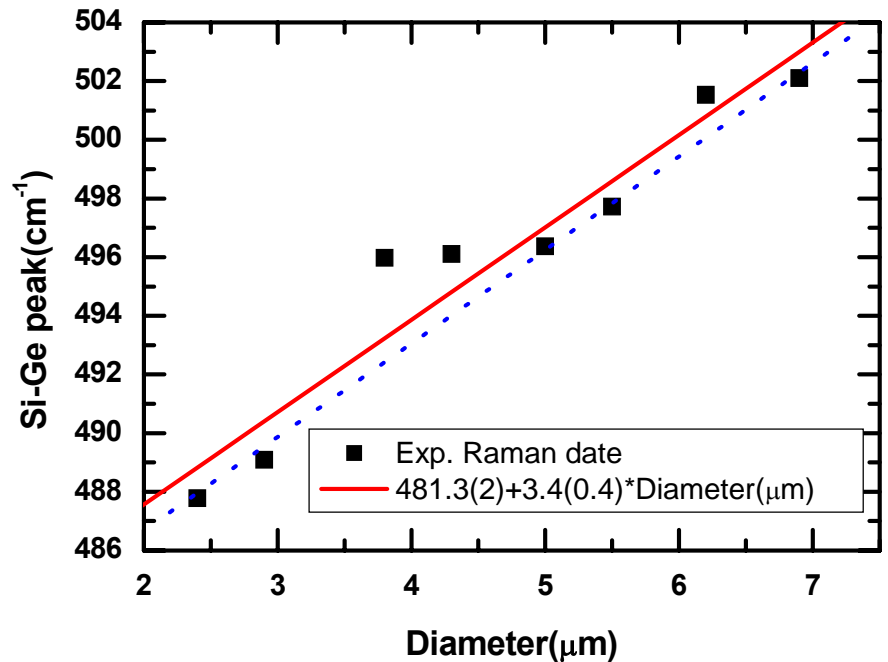
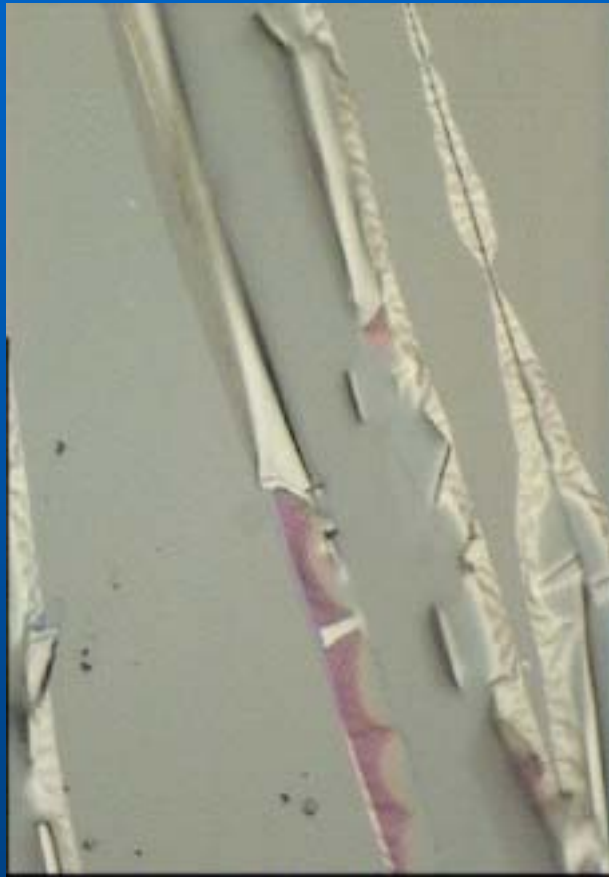
Reflectivity



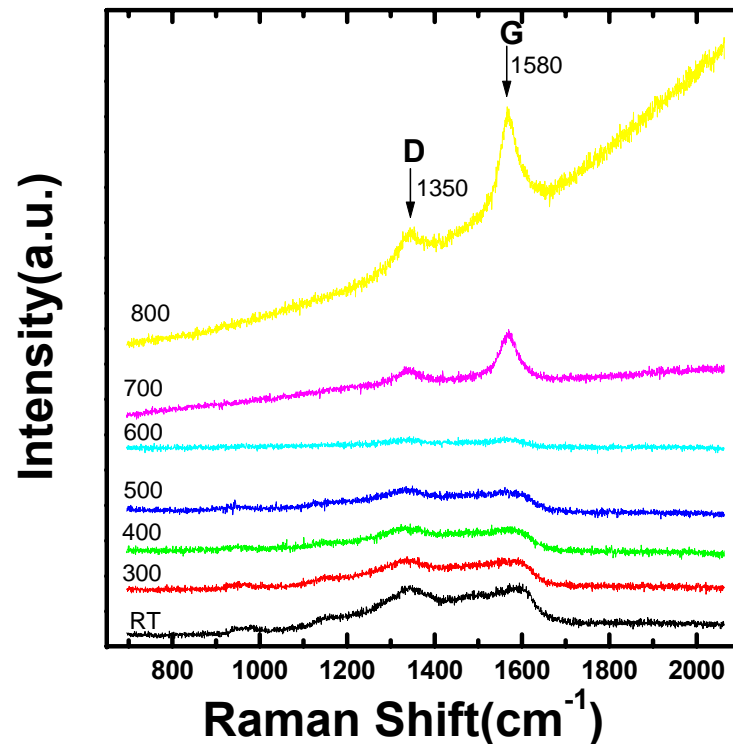
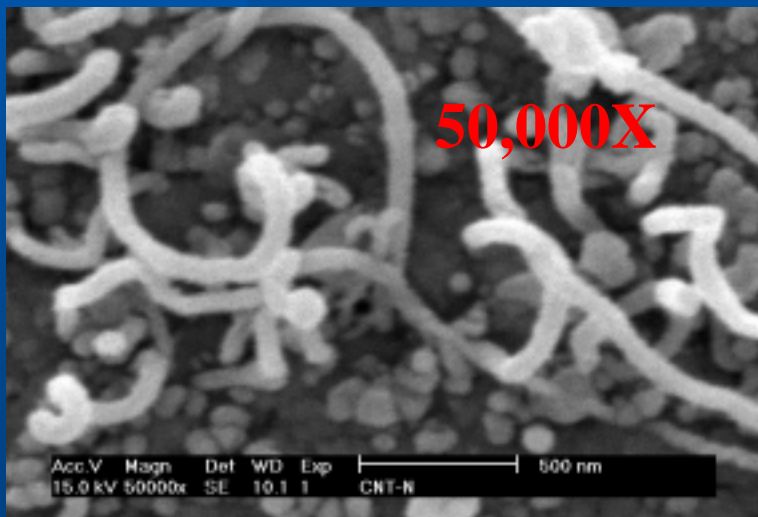
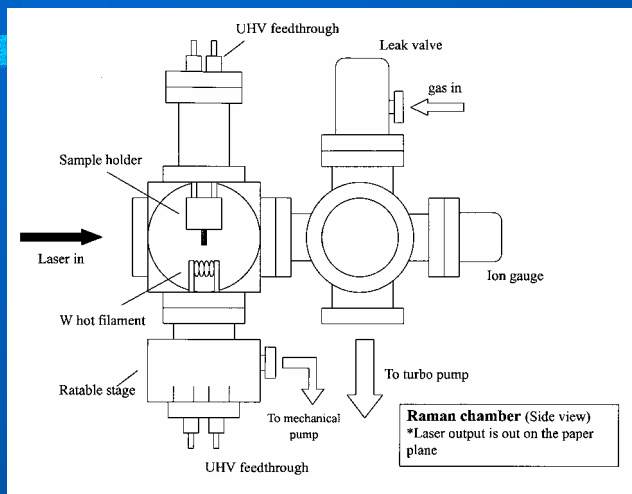
Optical Properties of Relaxed Si_{0.7}Ge_{0.3} Alloy, by L. W. Lai, C-T. Chia, H. L. Liu, H. H. Cheng , ICPS 2002



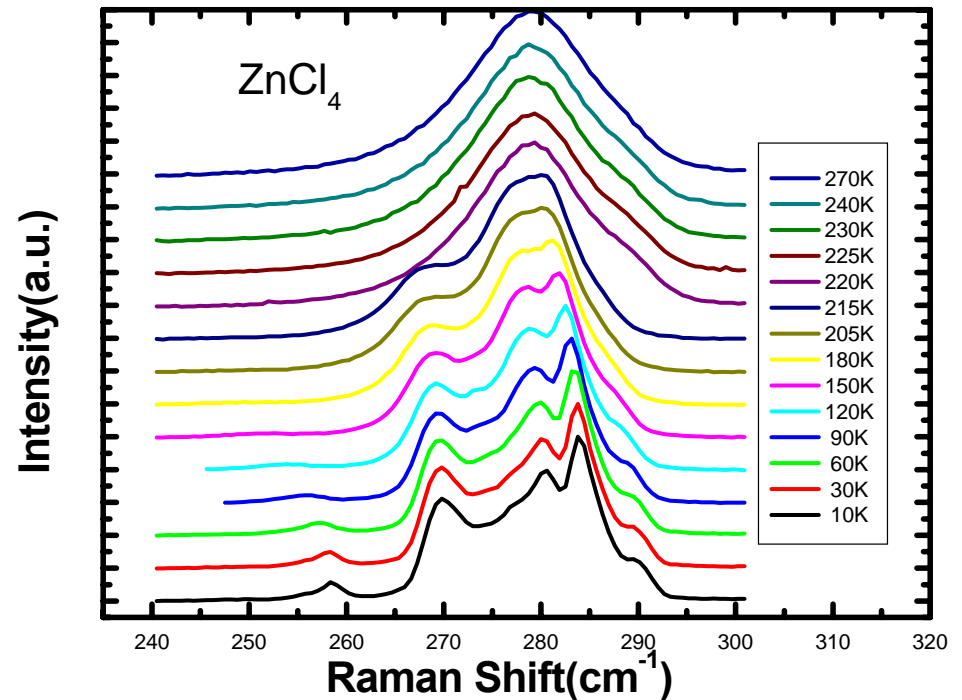
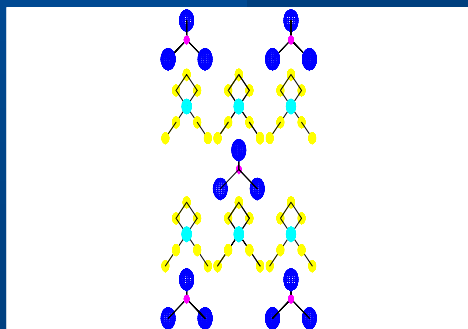
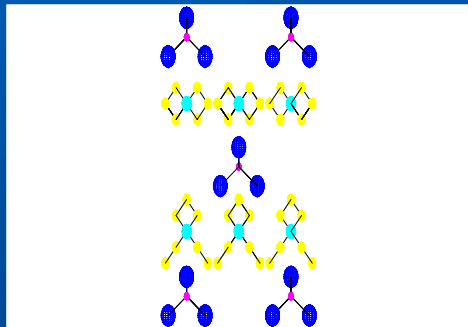
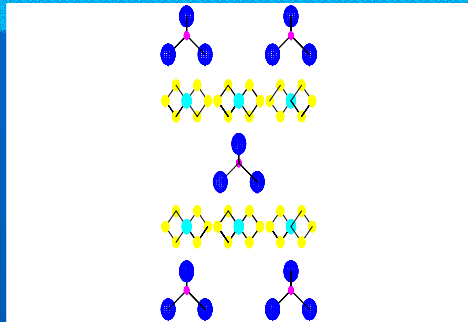
Micro-Pipe and Strain



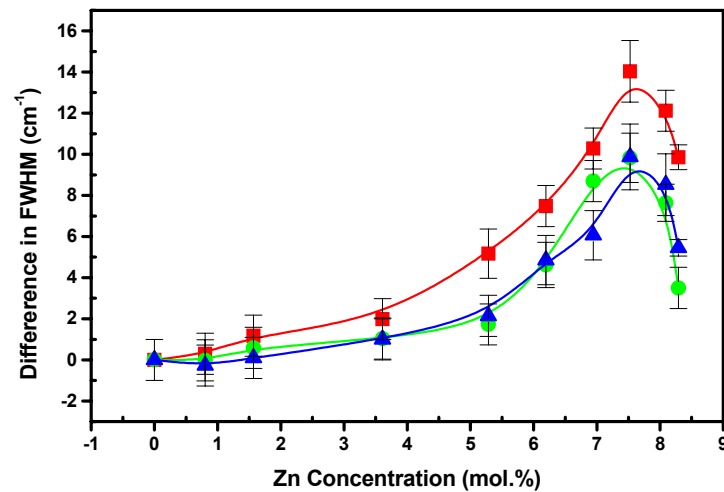
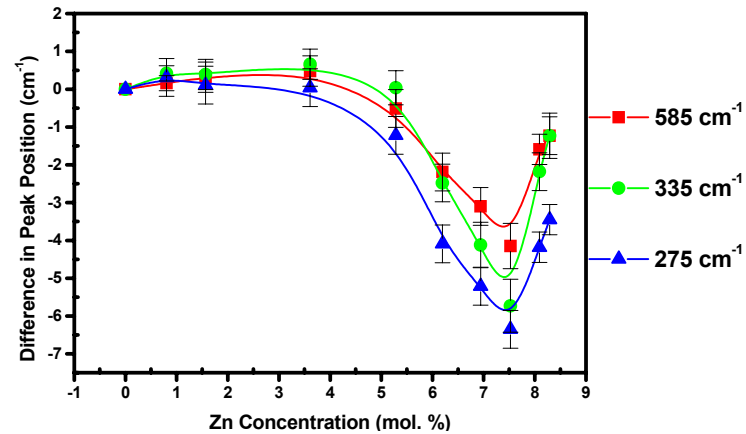
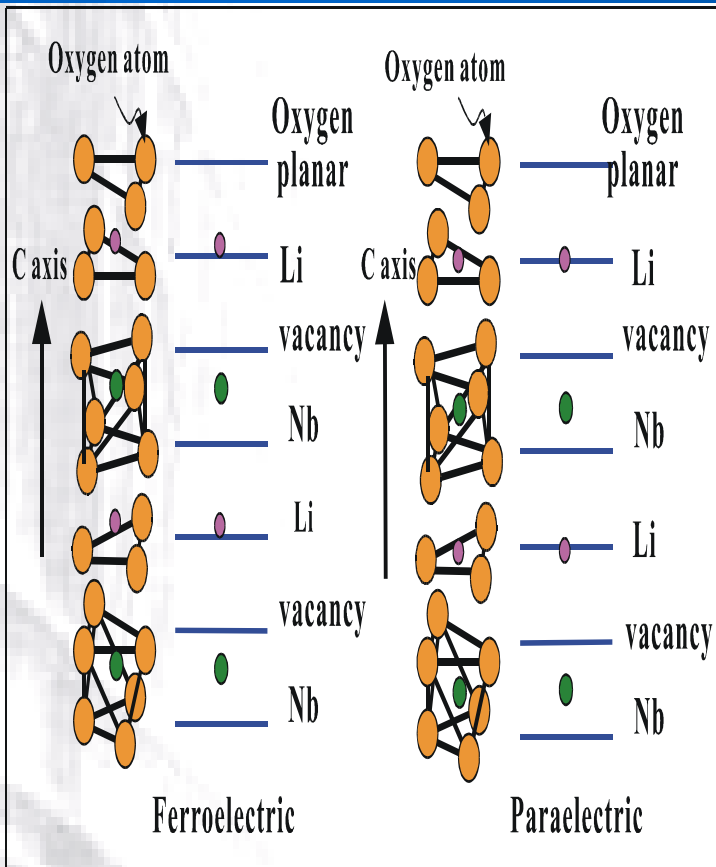
Carbon Nanotube in-situ Raman



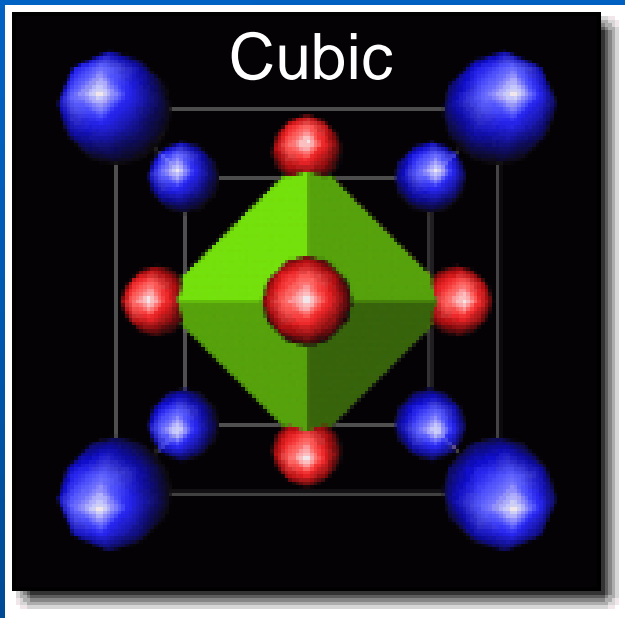
Phase Transition of $(\text{TEA})_2\text{ZnCl}_4$



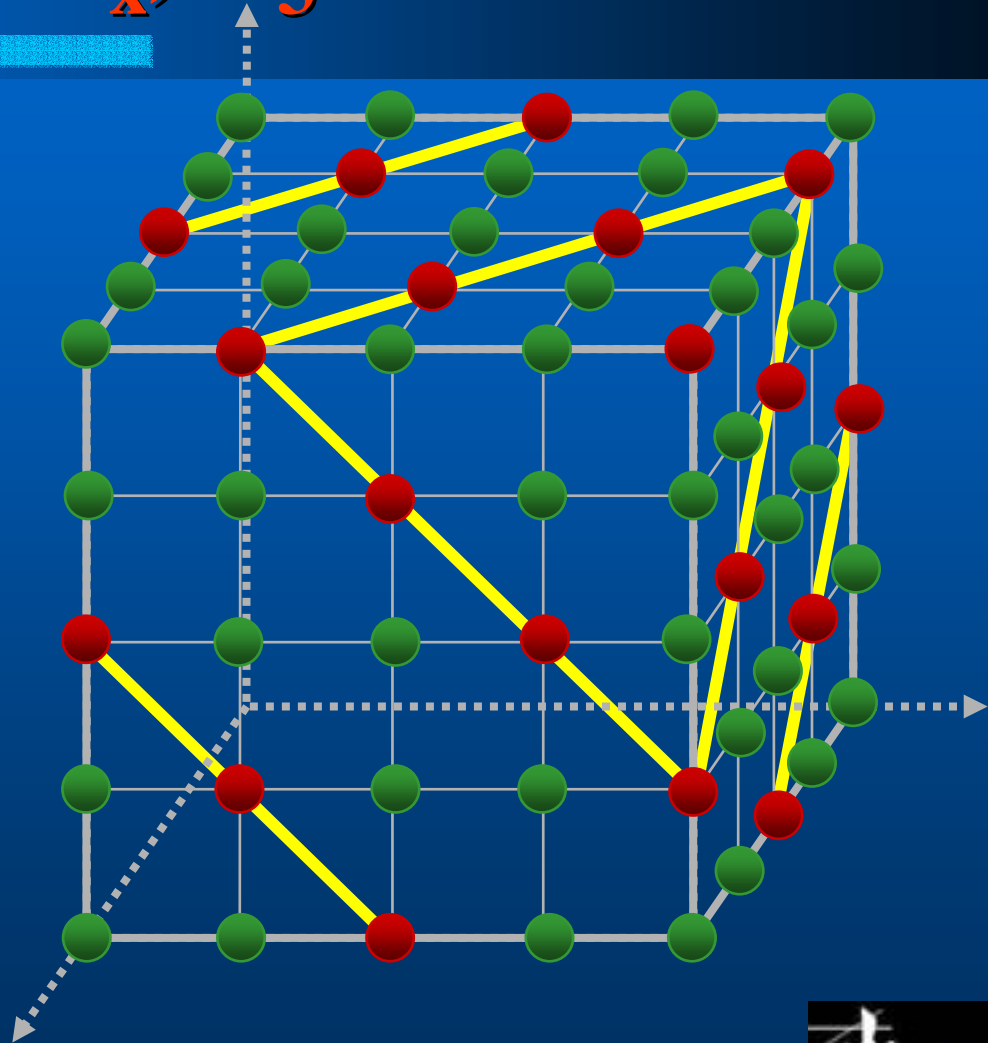
Raman Study of Zn-doped LiNbO_3



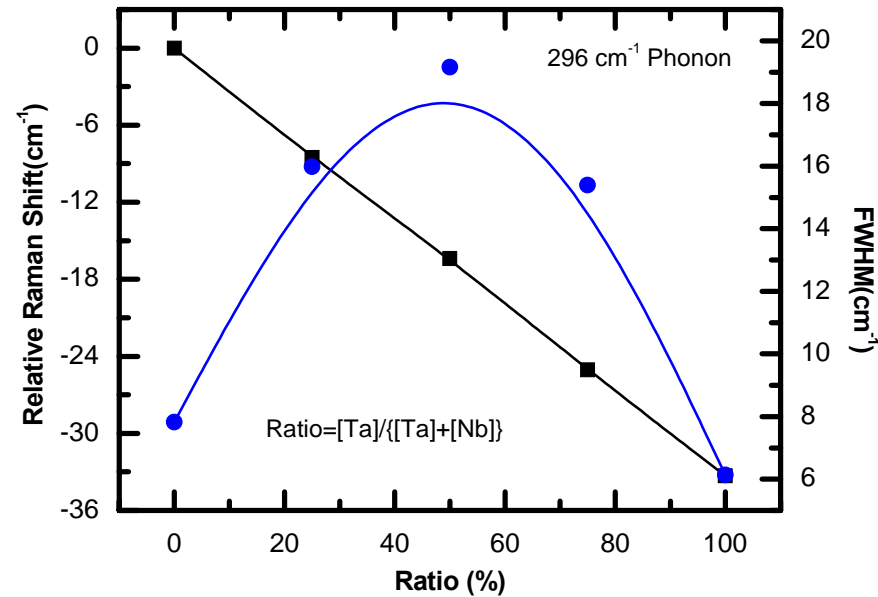
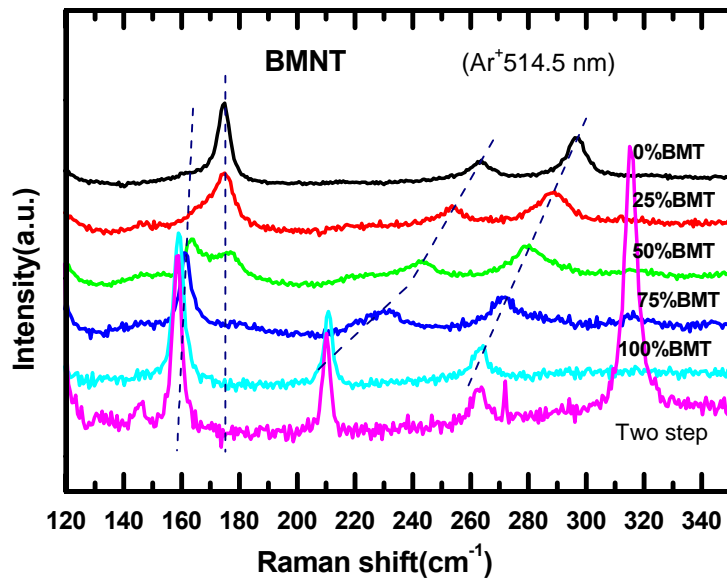
$\text{Ba}(\text{Mg}_{1/3}\text{Nb}_{2/3-x}\text{Ta}_x)\text{O}_3$ Ceramics



● Ta ● Mg



Spectra of $\text{Ba}(\text{Mg}_{1/3}\text{Nb}_{2/3-x}\text{Ta}_x)\text{O}_3$



DILOR XY Raman Spectrometer



- Ar+ Laser
- He-Ne Laser
- Diode Pump YAG laser (SHG)

10K to 1300K

Micro-Raman



Raman實驗室介紹

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台大：李嗣岑、鄭鴻祥、張玉明教授

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即將會有合作關係的伙伴!



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Physics of NTNU

