



SDI Review Form 1.6

Journal Name:	<u>Physical Science International Journal</u>
Manuscript Number:	Ms_PSIJ_37435
Title of the Manuscript:	Multi-Phonon Raman Scattering in GaAs/Al_{0.28}Ga_{0.72}As Super-lattice
Type of the Article	

General guideline for Peer Review process:

This journal's peer review policy states that **NO** manuscript should be rejected only on the basis of '**lack of Novelty**', provided the manuscript is scientifically robust and technically sound. To know the complete guideline for Peer Review process, reviewers are requested to visit this link:

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PART 1: Review Comments

	Reviewer's comment	Author's comment (if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)
Compulsory REVISION comments	<p>- Presented spectrum is not in agreement with [Nakayama, Masaaki, et al. "Photoreflectance and Resonant Raman Scattering of Above-Barrier Transitions in a GaAs/AlGaAs Superlattice." <i>Japanese Journal of Applied Physics</i> 34.S1 (1995): 80.]</p> <p>- poor information about Raman system(laser energy, spectrometer parameters)</p> <p>- no prove the measured sample is a superlattice (HRTEM, TEM XRD experiments)</p> <p>- Authors claim that 782 nm laser interacts strongly with LO phonon based they have similar wave vector. Resonance Raman effect is based on similar energy of scattered light and some transitions in the sample (what is truth in this case), not based on similar wave vector [Sood, A. K., et al. "Resonance Raman scattering by confined LO and TO phonons in GaAs-AlAs superlattices." <i>Physical review letters</i>54.19 (1985): 2111.]</p> <p>-267cm⁻¹, 290cm⁻¹, 584cm⁻¹ peaks are characteristic for GaAs first order and second order scattering what has nothing in common with superlattice [Sood, A. K., et al. "Second-order Raman scattering by confined optical phonons and interface vibrational modes in GaAs-AlAs superlattices." <i>Physical Review B</i> 32.2 (1985): 1412]. Only 876 cm⁻¹ peak is not easy to connect with bulk material.</p> <p>-if there is GaAs/AlGaAs some other peaks should be seen [Sood, A. K., et al. "Second-order Raman scattering by confined optical phonons and interface vibrational modes in GaAs-AlAs superlattices." <i>Physical Review B</i> 32.2 (1985): 1412]</p> <p>-the whole article is based on one Raman spectrum - it is too little data</p> <p>-necessary to publish the article is to prove the measured sample is indeed superlattice and in the Raman spectrum some of the basic superlattice band is visible. So the sample is a superlattice and the measured spectrum is a spectrum of the superlattice</p>	<p>Thank you ,reviewer, very much! I agree with reviewer's comment and have finished some of corrections in the manuscript, such as information about Raman system ,Fig.1, Fig.2, and Fig.3,</p> <p>The measured sample was produced by MBE in Chinese academy of science . They have growing GaAs/AlGaAs multi-quantum well and super-lattice structures for 20 and more years and have made the measurement of HRTEM and TEMXRD and the investigation of crystal structures and GaAs/AlGaAs interfaces for the super-lattice grown by their, proving the grown sample is indeed super-lattice structures. Their technology for growing GaAs/AlGaAs super-lattice is mature.</p> <p>Therefore, it is unnecessary to make again the measurement of HRTEM and TEMXRD for the sample.</p> <p>I am considering other opinions on the manuscript.</p>
Minor REVISION comments	<p>- Calculation based on linear chain in bulk materials- it may not be correct. More proper may be: [A. K. Sood, J. MenCndez, M. Cardona, and K. Ploog, "Resonance Raman</p>	



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	<p>scattering by confined LO and TO phonons in GaAs-AlAs superlattices," Phys. Rev. Lett., vol. 54, pp. 2111-2114, 1985]</p> <p>[S. K. Yip and Y. C. Chang, "Theory of phonon dispersion relations in semiconductor superlattices," Phys. Rev. E, vol. 30, pp. 7037- 7059; 1984]</p> <p>[B. Djafari-Rouhani, J. Sapriel, and F. Bonnouvrier, "Bulk and surface phonons in superlattices of diatomic crystals," Superlattices and Microstructures, vol. 1, 1985, pp. 29-34]</p> <p>as it was shown in:</p> <p>[Klein, M. V. "Phonons in semiconductor superlattices." <i>IEEE journal of quantum electronics</i> 22.9 (1986): 1760-1770]. Authors should prove this point of view is correct</p> <p>-Fig. 1 Y-axis of spectrum should be named</p> <p>-Fig. 2 Y-axis should have scale, $\omega(h)$ and $\omega(l)$ should be explained in fig. description.</p> <p>-Fig. 3 the first part should be shown near fig. 1 to show what the experimental configuration is</p>	
<u>Optional/General</u> comments		