



SDI FINAL EVALUATION FORM 1.1

PART 1:

Journal Name:	Physical Review & Research International
Manuscript Number:	2013_PRR1_3663
Title of the Manuscript:	Characterization of Nanoinclusion in Nanocomposite

PART 2:

FINAL EVALUATOR'S comments on revised paper (if any)	Authors' response to final evaluator's comments
<p>The authors made some revisions on the manuscript. But I am still wondering if such a investigation is pratical and necessary. In the FE model, the diameter of the inclusion is 1 nanometer and its Young's modulus is 0.026Gpa. What's the use of such inclusions? Can the authors provide some real application examples of such nano composites?</p>	<p>I would like to clarify that the whole structure of the discussion section including the figures was changed according to the invaluable feedback, suggestions and recommendations of the reviewers, so do appreciate it.</p> <p>In general, inclusions are not presented as isolated ones in the matrix material. On the one hand, inclusions frequently agglomerate into stringers or clusters as detrimental micro-defects during the material manufacturing process. Besides, inclusions are intentionally introduced into composite materials as reinforcing fibers or particles. These inclusions often cause stress concentration in their vicinities where cracks and dislocations may form. Thus, it is important to study multiple inclusions, dislocations and cracks and their interactions for optimal design of advanced materials and their performance improvement</p> <p>Basically, one of the main engineering problems is how to predict the mechanical behaviour of materials, but unfortunately voids, inclusions, defects, irregularities... cannot be avoided (i.e., there is no perfect material), therefore always it is tried to establish limits for the existence of such defects in the material.</p> <p>Many researchers have spent massive amount of effort for developing various analytical as well as numerical techniques for modelling and estimating the impact of the undesired inclusions in different types of materials.</p> <p>In some occasions, void or inclusion may be present in some region of the nanocomposite system. These void and inclusion may influence the distribution of interfacial stresses and hence increase the stresses at certain location and whenever exceed the of permissible stress levels, will lead to the initiation of cracks and hence lead to the failure of the nanocomposite. Thus, the influence of inclusions in the nanocomposite on interfacial stresses play a big role in failure mechanism of the nanocomposite due to its impact on the interfacial stresses along the nanofiber. Because the interfacial stresses occur at the interface nanofiber/matrix, it is important to understand that the direct measurement of the interfacial stresses which is almost impossible. Finite element method (FEM) is used to clarify the distribution of interfacial stresses and to give an clear estimation of the behavior of the nanocompoite.</p> <p>The study of inclusions is of significance to the development of advanced materials for aerospace, marine, automotive and many other applications. This is because the presence of inclusions in materials affects their elastic field at the local and the global scale and thus greatly influences their mechanical and physical properties. (2013) [35]. This paper review whatever done of investigation of inclusion effect on the properties of the material, but no one has studies the impact of nano-inclusion exist around a nano-fiber embedded in nano-composite.</p>



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	<p>Regarding the properties of the nano-inclusion, the modulus of elasticity of the nano-inclusion to the matrix stiffness(i.e., E_i/E_m) were selected based on previous investigation of researchers for different range of values (i.e., $E_i/E_m=10^{-4}$ to 10^4) [48-51], even the size and geometry of the inclusions were investigated as well.</p> <p>Regarding the application of the nano-composite, actually the recent progress of the inventions in the nano-technology sector is so vast and covers many applications, as mentioned [35].</p>
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