



SDI Review Form 1.6

Journal Name:	Physical Science International Journal
Manuscript Number:	Ms_PSIJ_19439
Title of the Manuscript:	High Microwave Absorption of Multi-Walled Carbon Nanotubes (Outer Diameter 10 – 20 nm)-Epoxy Composites in R-Band
Type of the Article	Original Research 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>In this work, authors fabricated MWCNTs-epoxy composites, which shows unique characteristics of microwave absorption in R-band, and they found the optimized the weight % of MWCNTs in composites to maximize their absorption in wide range of microwave.</p> <p>I think readers of this journal would have interest in this study, but found some ambiguity in their discussion, and would like to recommend publication after some revisions regarding the points listed below.</p> <p>1. Title and introduction: I wonder why you emphasize the outer diameter of MWCNTs and it should be commented why you focus on R-band region, not in 2-18 GHz region as you referred.</p> <p>2. Section 3.1, Line 94 – 101: This part mentioned general discussion about the effect of morphology to microwave absorption properties. I think that the discussion should be moved to latter part of this section or written after showing their absorption properties.</p> <p>3. Section 3.2, Line 122-123: You mentioned “the peak positions slightly increase to higher diffraction angles as the loading fraction of MWCNTs”, but the peak shift is hardly recognized. Please give the detailed values in the manuscript.</p>	<p>1. Discussions regarding why emphasize the outer diameter of MWCNTs are added; See Line 47-49. Discussions regarding why focus on R-band are in Line 49-52.</p> <p>2. Thanks for the suggestions. These lines are moved in Section 3.5 for the discussion of the effect of morphology to microwave absorption properties.</p> <p>3. Yes, the peak shift is small. Section 3.2 is revised to address the change of the XRD peak shape, including the peak width and the appearance of a shoulder structure around $2\theta = 18.9^\circ$.</p>



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	<p>4. Section 3.2. Line 123-124: What interaction would affect the reflection peak at $2\theta = 18.9^\circ$? You should add further discussion about it.</p> <p>5. Section 3.3, Line 150 – 152: It is better to show dispersion dependence of MWCNTs on the dielectric permittivity of composites in the range of 26 – 40 GHz, when you claimed that aggregates of MWCNTs in composites were main reason for the increase.</p> <p>6. Section 3.3, Line 153 – 161: The clear discussion to explain the increase of ϵ' and ϵ'' should be given in the manuscript. I don't understand the reason why the 9 and 10 wt% sample give the high values compared to other samples.</p> <p>7. Section 3.5: If possible, please add further explanation why the absorption ratio in the range < 30 GHz in the 10 wt% sample decreased compared to 7 and 8 wt% samples, as shown in Figure 5 (a). I would like to know why the frequency dependence appeared at high wt% MWCNTs sample (also up to 7 - wt% samples in Figure 5 (b)).</p>	<p>4. In the revised discussion in Section 3.2, the interaction is attributed to weak Van der Waals interaction between the epoxy and MWCNTs.</p> <p>5 & 6. The Section is revised to discuss the increase of ϵ' and ϵ'' as the MWCNT loading increases in the epoxy composite. Specifically, the conductive electrons and charge polarizations due to MWCNTs and MWCNT aggregates in epoxy matrix are more effective to interact with the microwave field.</p> <p>7. More explanation for the the absorption ratio in the range < 30 GHz in the 10 wt% sample compared to 7 and 8 wt% samples still remains for further theoretical work, that we cannot solve them at present. This manuscript mainly reports the results of our experimental work on the subject.</p>
<u>Minor</u> REVISION comments		
<u>Optional/General</u> comments		