B P International

BPI Review Form 070520

Book Name:	**Current Innovations in Chemical and Materials Sciences**
Manuscript Number:	**Ms_BP_7875C**
Title of the Manuscript:	**Effect of ca+2 addition on the properties of ce0.8gd0.2o2-δ for itsofc**
Type of the Article	**Book chapter**

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PART 1: Review Comments

	Reviewer's comment	**Author's comment***(If agreed with the reviewer, correct the manuscript and highlight that part in the manuscript. Authors must write his/her feedback here)*
Is the manuscript important for the scientific community? Please write a few sentences explaining your answer	The book chapter deals with the synthesis of Ca^{2+}-doped GDC solid electrolytes and their characterization by some techniques. it contains useful information for the scientific committee.	
Is the title of the article suitable? Do you have any alternative Title in your mind?	It is NOT suitable, the alternative is: "Effect of ca+2 addition on the properties of ce0.8gd0.2o2-δ solid electrolyte for fuel cell applications".	
Is the abstract of the article comprehensive? If your answer is No, please provide suggestions	It is NOT comprehensive: The introduction should be enriched with a literature review on using other salts or metal oxides for enhancing grain boundary conduction. The involvement of the enhancing mechanism with a typical schematic diagram may be significant. Updated additional references are essential. The conclusions part of the manuscriptis just the results obtained. What are the conclusions derived?? And what are the promises of the work??? For example, the benefit of using the eco-friendly relatively cheap calcium carbonate as an ingredient in fuel cell applications.	
Do you think the English quality of the article is suitable for scholarly communications? If your answer is No, please provide suggestions	It is acceptable, but not perfect	
Please provide your comments regarding the appropriateness of different sections of the manuscript.	1. The title of the chapter is not suitable. I suggest changing it to: "Effect of ca+2 addition on the properties of ce0.8gd0.2o2-δ solid electrolyte for fuel cell applications". 2. All the chemical formulas should be written correctly (for example CaCO3, Ca+2). The introduction should be enriched with a literature review on using other salts or metal oxides for enhancing grain boundary conduction. The involvement of the enhancing mechanism with a typical schematic diagram may be significant. Updating the references is important. conduction 3. The synthesis method is adopted by the researchers? or based on literature? This should be clarified and if it is extracted from the literature, this should cited. The researchers mentioned that 2wt% of polyvinylpyrrolidone was added to the powder as a binder. Why did they choose this binder? and why they used 2 wt. % of it?? The situation should be verified. 4. From XRD results, the researcher mentioned that the addition of Ca in GDC resulted in the peak shift to lower 2 theta values. The situation is not clear in Fig. 1, and there are no significant shifts in most of the peaks! 5. When making a comparison for the morphology of the prepared samples. The comparison should be based on a unified magnification. For example, if Fig.3 c and d were tested with the same magnification, the morphology of Fig. 3d indicated smaller grain sizes of different shapes. Therefore, the Figure magnifications should be obvious (clear in the figure), and the discussion of the morphology results should be verified and modified. 6. The equation's parameters are not defined. The parameters of all the equations should be defined precisely. 7. Fig. 10 Cole-Cole plots, the (X) should be identified at the Figure caption or somewhere in the plots. 8. The researchers reported that (the higher the Ca2+ concentration, the total conductivity	

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	decreases due to defect association leading to a lowering of the effective concentration of oxygen vacancies and their mobility. Hence increase in Ca2+ content to high values leads to a decrease in the overall conductivity). What is the defect associated with increasing the Ca2+ content that leads to a decrease in the overall conductivity?? Define the defect or the defects in concern. (the conductivity is usually ruptured when there is a cut or block in the path of moving the electrons). 9. Table 2 should be shifted to be after Fig.12. 10. The source of the data regarding fitting the temperature dependence of total electrical conductivity into the Arrhenius relation should be clarified i.e., the y-axis should be ionic conductivity. Why it was multiplied by T??, Moreover, (A/T) is the value of the intercept of Arrhenius's plot, it is a constant! The situation should be clarified, in addition, the differences in the values of the activation energy do not match the differences in the straight line's slops!! 11. In the conclusions part the researchers review just the results obtained. What are the conclusions derived?? And what are the promises of the work??? For example, the benefit of using the eco-friendly relatively cheap calcium carbonate as an ingredient in fuel cell applications.	
Do you think that the references in the manuscript are proper, recent and sufficient? If you have any suggestions, please write here.	Need updating	

PART 2:

	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)*
Are there ethical issues in this manuscript?	*(If yes, Kindly please write down the ethical issues here in details)*	

Reviewer Details:

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Department, University & Country	**Basrah University, College of Science and Technology, Iraq**