

# Manuscript pre-review Report

Significance	
Whether the findings possess the promise for theoretical research or application in the field related?	The present paper is a significant study in numerical turbulent combustion which can be used in several combustion applications, and it is one of the complex research topics in the field of combustion.
What is the specific significance of the findings ?	Authors could able to simulate a numerical turbulent combustion with heat loss and fuel stratification using a valuable FGM method which is completely compatible with experimental data in a lot of physical cases, as it is shown in the Fig. 16. Although there are some simplification such as fixing Lewis Number into 1, the overall value of the current work is high enough to be published in one of the reputable journals in the field of combustion.
Novelty	
What kind of new technologies or methods is applied that deserved to be recommended?	A novel numerical method entitled FGM.
What new discoveries or conclusions are presented?	The application of FGM in combustion with heat loss, fuel stratification and turbulence has never been studied in literature. It means that the whole of the paper, especially the application of

FGM in turbulent combustion is new and novel.

### Abstract

Does the abstract concisely and accurately state the basic content of a finding?

Towards improving the abstract of the present article the following issues should be considered:

- it should outline the methods used to accomplish the main objectives
- it should shortly present the main findings
- it should draw the main conclusions

### Introduction

Does the introduction contain complete reference to enable the reader to clearly place the current work in the context of what is already known?

The latest advances in the field should be clearly stated and shortly discussed, in order the originality and the novelty of the present work to be revealed. In particular, the argument that “the essential differences between a UNDD system and conventional NCs in catalytic reactions have rarely been studied” should be justified. What about the studies so far performed in relation to surface chemistry and catalytic properties of NDs-based materials?

Is there a lack of association between the findings and prior research?

Although the latest works in the field are properly cited, there is no corresponding discussion about the recent developments in the field towards revealing the step beyond attempted in the present study. Since the present work aims at exploring the

	physicochemical properties of UNDDs, the recent advances in the field should be clearly stated.
<b>Materials and methods</b>	
Are enough details provided for a competent worker to repeat the study and reproduce the results?	Materials and Methods were not provided. However, based on the online supporting information of the aforementioned paper the following issues should be considered: - Not enough information is provided about the preparation of GR and MWCNTs - The reaction conditions (catalyst mass, flow rate, GHSV) should be clearly stated.
<b>Results</b>	
Are the data, digested and condensed, presented with important trends extracted and described?	YES. However, towards improving the impact of the present work the following issues could be considered: Besides TPD, TPR studies could be also carried out to gain insight into the reactivity of different oxygen functional groups (surface, bulk, interface) as well as into the oxygen storage capacity (OSC). These studies are expected to shed more light towards establishing a more reliable structure-activity relationship.
<b>Discussion</b>	
Does the discussion rest firmly on the evidence	To improve the impact of the present work towards publishing in a higher IF journal the following issues should be also considered:

<p>presented in the results section?</p>	<p>1) The relationship between sp<sup>2</sup> (%), SBET and conductivity should be discussed in a more thorough manner.</p> <p>2) The catalytic activity is mainly related with the work function. It could be of major importance to provide/discuss the role of other identifying parameters (conductivity, oxygen abundance, surface area, etc) on the catalytic activity.</p> <p>Despite the fact that a completely different type of probe reactions is employed (one oxidation and one reduction process) a similar trend is obtained (Fig. 5). An explanation should be provided.</p>
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### Expert Academic Assessment Report

The intended journal: Chemical Communications	
Is the manuscript suitable to be submitted to this journal?	YES
Advantages of submitting the manuscript to the journal recommended	Publishes urgent, high quality communications from across the chemical sciences; high impact factor and readability; the fastest publisher of articles providing information on new avenues of research
Disadvantages of submitting the manuscript to the journal recommended	

### Journal Recommendation Report

### No.1 The Most Likely Target Journal

Journal Name: Physical Chemistry  
Chemical Physics (PCCP)

Impact Factor: 4.123

Website: <http://www.rsc.org/journals-books-databases/about-journals/PCCP/>

Review process : 2 weeks

Publication cycle: three-step process, i.e. manuscript submission, peer review and post-acceptance preparation.  
The timeline depends mainly on the length of review process.

Advantages of submitting the manuscript to the journal recommended

publication of cutting-edge original work in physical chemistry; high impact factor and readability; highly cited articles; rigorous and fair peer review process

Disadvantages of submitting the manuscript to the journal recommended

The article could be published in journals of higher impact factor if suitably modified (see comments above). In that case new experiments in conjunction with major modifications are required by authors.

### No.2 The Second-choice Journal

Journal Name: Nanoscale

Impact Factor: 7.367

Website: <http://www.rsc.org/journals-books-databases/about-journals/nanoscale/>

Review process : 2-3 weeks

Publication cycle: three-step process, i.e. manuscript submission, peer review and post-acceptance preparation.  
The timeline depends mainly on the length of review process.

Advantages of submitting the

A high impact international journal publishing high quality

manuscript to the journal recommended	research across nanoscience and nanotechnology; high impact factor; highly cited articles
Disadvantages of submitting the manuscript to the journal recommended	High rejection rate
<b>No.3 The third-choice journal</b>	
Journal Name: ACS Catalysis	Impact Factor: 10.614
Website: <a href="http://pubs.acs.org/journal/accacs">http://pubs.acs.org/journal/accacs</a>	
Review process : 2-3 weeks	Publication cycle: three-step process, i.e. manuscript submission, peer review and post-acceptance preparation. The timeline depends mainly on the length of review process.
Advantages of submitting the manuscript to the journal recommended	One of the best journals in catalysis; high impact factor and readability; highly cited articles
Disadvantages of submitting the manuscript to the journal recommended	High rejection rate