

The review of doctoral thesis

"Preparation and characterization of nanocomposite thin films for electronic and catalytic application"

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This thesis is focused on the preparation and characterization of the photocatalytic composites. These materials have been developed with environmental applications in mind. In particular, these are photocatalytic materials for the degradation of harmful pollutants. The topic of the thesis is therefore very up-to-date.

The theoretical part very briefly summarizes the current state of knowledge on the topic (in 21 pages with 54 references). In my humble opinion, this section would deserve more attention (e.g. description of analytical/characterisation methods - part of the title). The motivation and aims of thesis are well defined and reviewer can follow these points in experimental part (if they are fulfilled). During his studies, the student has published 6 articles in reputable journals (according to WOS) and 3 of them are directly related to his dissertation. He is the first author of three articles. From this point of view, the dissertation results have already been peer reviewed and student is probably able to do independent scientific research.

I have these questions for discussion after author's lecture on dissertation:

- 1) You used a variety of characterization techniques in your dissertation. Did you measure and interpret the data for all of them? You used a variety of characterization techniques in your dissertation. Did you measure and interpret the data for all of them? If not, please list the methods in which you are an expert.
- 2) You used Raman spectroscopy and infrared spectroscopy to determine the chemical composition. Given the nature of your materials, Raman spectroscopy is more important, why? What is the difference between them?
- 3) Which of the materials you have developed has application potential? Alternatively, what should be further developed?

Conclusion:

Hassan Ali has adequate knowledge in this scientific field. The student's dissertation meets the requirements for Ph.D. thesis. The aims of dissertation have been fully attained. Therefore, I recommend accepting this work for further proceedings and after a successful defence to award the student with the Ph.D. degree.

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