THESIS SUPERVISOR'S REPORT

I. IDENTIFICATION DATA

Thesis title:	**Photocatalytic degradation of organic pollutants**
Author's name:	**Rubin Hao**
Type of thesis :	bachelor
Faculty/Institute:	Faculty of Electrical Engineering (FEE)
Department:	Electrical Power Engineering
Thesis reviewer:	David Rutherford
Reviewer's department:	Physics

II. EVALUATION OF INDIVIDUAL CRITERIA

Assignment	**challenging**

How demanding was the assigned project?

The assigned project was demanding with regards to the amount of experimental work that was involved, particularly for those with no previous wet-lab experience. Nevertheless, the student showed a high level of technical ability and after initial training, was able to work unsupervised.

Fulfilment of assignment	**fulfilled**

How well does the thesis fulfil the assigned task? Have the primary goals been achieved? Which assigned tasks have been incompletely covered, and which parts of the thesis are overextended? Justify your answer.

The thesis has fulfilled the assigned task, which was to investigate the photocatalytic effect of gallium-doped zinc oxide nanoparticles to be used for the degradation of organic pollutants, such as textile dyes. There was no possibility to compare doped and undoped ZnO because the material was not synthesized by colleagues in Bratislava and specialist equipment is not available in the Department to synthesize in-house.

Activity and independence when creating final thesis	**C - good.**

Assess whether the student had a positive approach, whether the time limits were met, whether the conception was regularly consulted and whether the student was well prepared for the consultations. Assess the student's ability to work independently.

The student wrote the final thesis independently and with minimal consultation. This was in part due to the thesis being written in the final week before the deadline, therefore there was no available time for further discussions/improvements. Generally, the student was punctual and attended the lab at the scheduled time, asked questions regarding the technique and the reasoning for the project.

Technical level	**C - good.**

Is the thesis technically sound? How well did the student employ expertise in his/her field of study? Does the student explain clearly what he/she has done?

The project was heavily experiment-based and the thesis contains adequate detail describing the technical aspects. The student was relatively inexperienced at the beginning of the project but quickly excelled in the laboratory setting and developed a good understanding of the research. However, more detail should have been included in the 'Summary experiment procedure' since it would be difficult to recreate the technique with the detail given currently.

Formal level and language level, scope of thesis	**C - good.**

Are formalisms and notations used properly? Is the thesis organized in a logical way? Is the thesis sufficiently extensive? Is the thesis well-presented? Is the language clear and understandable? Is the English satisfactory?

The thesis is well presented, organized in a logical way with acronyms and notations generally used correctly. Language is good throughout, albeit a little short and lacks sufficient detail in parts. The Figures/graphs could be better explained within the text.

Selection of sources, citation correctness	**C - good.**

Does the thesis make adequate reference to earlier work on the topic? Was the selection of sources adequate? Is the student's original work clearly distinguished from earlier work in the field? Do the bibliographic citations meet the standards?

An adequate selection of references were included (>30) which were relevant to the current research, however the 'Discussion' section lacked a detailed comparison with other related literature (more than 1 article necessary) and should've been expanded which would have improved the grade.

Additional commentary and evaluation (optional)
Comment on the overall quality of the thesis, its novelty and its impact on the field, its strengths and weaknesses, the utility of the solution that is presented, the theoretical/formal level, the student's skillfulness, etc.

III. OVERALL EVALUATION, QUESTIONS FOR THE PRESENTATION AND DEFENSE OF THE THESIS, SUGGESTED GRADE

Summarize your opinion on the thesis and explain your final grading.
The thesis is generally of good quality, written well and the experimental work was performed to a high standard. The results show the potential for gallium-doped zinc oxide to be used as a photocatalyst for degrading organic pollutants using visible light illumination which is novel and adds to the existing knowledge on visible light-induced photocatalysis. It was not possible to compare the results with undoped ZnO because the material was not synthesized by colleagues elsewhere, as well as the limited time available to perform the additional experiments (in triplicate). The thesis lacks sufficient detail in parts, in particular the Discussion, and a more comprehensive comparison with other works would have significantly improved the grade.

It is for these reasons that I award for the thesis is **C - good.**

Date: **16.1.2023**   Signature: