

I. IDENTIFICATION DATA

Thesis title:	Stability and aging of perovskite solar cell materials
Author's name:	Jimi Xu
Type of thesis :	bachelor
Faculty/Institute:	Faculty of Electrical Engineering (FEE)
Department:	Department of Electroenergetics
Thesis reviewer:	Jaroslav Kuliček
Reviewer's department:	Department of Physics

II. EVALUATION OF INDIVIDUAL CRITERIA

Assignment	ordinarily challenging
<i>How demanding was the assigned project?</i>	
The project assigned was ordinarily challenging. The student needed to study the current state of the problem in the literature and several analytical measurement methods and principles.	

Fulfilment of assignment	fulfilled
<i>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.</i>	
The student completely succeeded in fulfilling the assignment and individual goals. New results were achieved.	

Activity and independence when creating final thesis	B - very good.
<i>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.</i>	
The student was active and performed independent measurements. He wrote the thesis and improved most of it based on consultations.	

Technical level	C - good.
<i>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?</i>	
The technical level of the thesis is good. The student managed to use a combination of different analytical methods to study the aging of the perovskite. The perovskites showed a photovoltaic response after two years. Some results could be better discussed in the thesis, for example, morphology.	

Formal level and language level, scope of thesis	B - very good.
<i>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?</i>	
Formalisms and notations are used mostly correctly. The thesis is organized logically, and it is sufficiently extensive. Generally, the language is clear and understandable. There are typos in the text and grammar mistakes.	

Selection of sources, citation correctness	A - excellent.
<i>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?</i>	
The student cites 29 sources in the thesis. In my opinion, the sources used are sufficient and relevant to the work. The student states his results and contribution to the work. All citations are traceable and meet the standards.	

Additional commentary and evaluation (optional)
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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.

The thesis assignment was to study the influence of the aging of the perovskite materials based on the different ratios of MAI/PbI₂ with or without charge transporting layers. The photoactivity of the samples was studied using two light sources. The results showed that samples are still photoactive with the influence of aging. Also, the samples showed different photovoltages after illumination by the Halogen lamp and the Solar simulator. These results could be interesting for the community working with the photoactive materials. The student was active at work, skilled in the laboratory and processed everything independently. The student did not do very well in writing the thesis, but I appreciate his effort to improve the work after consultations and write it in time.

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

The student had an active approach to the practical part of the work and achieved scientifically interesting results. The thesis is written good, but some parts could be better discussed, as I mentioned above.

The grade that I award for the thesis is **B - very good**.

Date: **2.6.2022**

Signature: