

**REVIEWER'S FORM
for thesis evaluation**



1. Identification of the student

Student:	Emily C. Painter
Thesis:	Influence of ambient conditions on building materials: study of material degradation in the archaeological areas of Prague Castle
1 st Institution:	Universidade do Minho
2 nd Institution:	Czech Technical University in Prague
Academic year:	2021/2022

2. Identification of the reviewer

Name:	Cristiana Lara Nunes
Institution:	Institute of Theoretical and Applied Mechanics of the Czech Academy of Sciences
Position:	Associate scientist

3. Fulfillment of thesis goals

excellent ×	above aver. <input type="checkbox"/>	average <input type="checkbox"/>	below aver. <input type="checkbox"/>	weak <input type="checkbox"/>
Comments:				
The subject of the thesis is very interesting and has high practical significance for the conservation of the archeological site of the Prague Castle. The proposed objectives were successfully achieved, which is reflected in the clear presentation of results and respective discussion, as well as in the conclusions.				

**REVIEWER'S FORM
for thesis evaluation**



4. Academic/scientific/technical quality

excellent ×

above aver. ☐

average ☐

below aver. ☐

weak ☐

Comments:

The thesis encompassed extensive experimental work and complex processing of data, which is well presented, accurate and fairly well interpreted. The results are well discussed and compared with relevant literature on the subject.

The student clearly reveals a good understanding of the materials and damage mechanisms by salt crystallisation.

5. Formal arrangement of the thesis and level of language

excellent ☐

above aver. ×

average ☐

below aver. ☐

weak ☐

Comments:

The thesis is very well written, and the documentation and presentation of data is of very high quality. In general, the thesis is well structured, but there are sections in the state-of-the-art that I would suggest embedding in the methodology and results & discussion sections, namely section 4. Damage Survey and Characterisation and respective sub-sections. Annexes should be ordered in order of appearance in the text (Annex J is mentioned first in the text).

**REVIEWER'S FORM
for thesis evaluation**



6. Further comments

A few suggestions:

- pp. 21: there is a glossary specific for damage assessment of brick and concrete (MDCS: <https://mdcs.monumentenkennis.nl/damageatlas>); I also suggest finding a more suitable glossary for describing damage in archaeological wood, e.g., 10.31219/osf.io/x8m4j
- pp. 47: the water absorption by capillarity results show that the mass did not stabilize after the 2h testing period and this may be related to the short duration of the test; for how long was the test continued after the samples reached the maximum capillary moisture content? The term "hydrophobicity" is incorrectly used in this context; I suggest writing that the variations are related to the natural heterogeneity of the stone samples.
- pp. 72: I suggest calculating the drying rate for stages I and II, and the drying index (see standard EN16322: 2013) from the evaporation curves for an easier analysis and comparison of the results.
- HMC results: moisture content (MC) and hygroscopic moisture content (HMC) are expressed as weight %, therefore, the comparison of results of samples with very different water absorption behaviour (stone, mortar, brick) is very complex. I suggest focusing in comparing the HMC results (graphs) between the same types of material. I also suggest expressing the results of MC and HMC in one graph for easier interpretation of the moisture sources. Recently, a charge balance calculations toolkit for overcoming the RUNSALT program ionic balance issues has been developed and can be found here: <https://zenodo.org/record/6280617#.YtgPE3bRY2x>

7. Grade: A (excellent)

Use the following scale

A (excellent)	B (very good)	C (good)	D (satisfactory)	E (sufficient)	F (fail)
---------------	---------------	----------	------------------	----------------	----------

ITAM, Prague

July 20, 2022

The Reviewer,

Cristiana Lara Paulos Nunes