



SEAHA

EPSRC CENTRE FOR DOCTORAL TRAINING
SCIENCE AND ENGINEERING IN
ARTS HERITAGE AND ARCHAEOLOGY

SEAHA Studentship: Preservation of geological collections

The EPSRC Centre for Doctoral Training in Science and Engineering in Arts, Heritage and Archaeology (SEAHA) at University College London, University of Oxford and University of Brighton (<http://www.seaha-cdt.ac.uk/>), in collaboration with Amgueddfa Cymru – National Museum Wales (<https://museum.wales/cardiff/>) and BSRIA Ltd (<https://www.bsria.co.uk>), is seeking applications for a fully funded studentship on the topic “Preservation of geological collections”. Funded by the Engineering and Physical Sciences Research Council (EPSRC) through the SEAHA Centre for Doctoral Training, the four-year doctoral research project will be supervised jointly by School of Geography and the Environment at the University of Oxford, Amgueddfa Cymru – National Museum Wales and BSRIA Ltd.

Despite centuries of research on pyrite decay there is a dearth of knowledge in subjects that would help museums improve the effectiveness of their care of geological collections, including the categorisation of damage to geological specimens, methodologies for objective routine condition assessment, the definition of an adequate storage environment, and successful conservation treatments. There is sufficient evidence to dispel the myth that geological collections are inherently stable and require fewer resources to preserve them than other areas of museum collections. In fact, a proportion of geological collections demand a level of attention and maintenance comparable with archaeological metal collections, and similar environmental and pollution-related considerations. Currently available methodologies are not suitable for routine collection monitoring, results are not necessarily replicable, and, in the absence of guidance on suitable storage conditions, triggers for, and the suitability of, conservation actions are difficult to determine. We need a more robust approach to the delivery of preventative conservation of geological collections. This includes defining what kind of material change in minerals constitutes damage; developing a protocol for routine monitoring of museum geological collections for potential damage; establishing optimum environmental and minimum air quality standards for different types of minerals; and testing rigorously the suitability of conservation treatments that are presently available.

The aim of the project is to develop recommendations for the appropriate storage of geological collections, including endorsed levels of indoor air pollutants and relative humidity concentrations for a range of vulnerable minerals.

1. What constitutes damage in geological specimens? An agreed set of parameters to be developed that will allow non-subjective condition assessment of specimens.
2. How can we measure damage to mineral specimens, especially routinely and in large collections? A methodology and protocol to be defined for condition assessing geological specimens, based on the characteristics defined under 1. This is likely to require the development of new/adapted monitoring technology, potentially based on digital mapping.
3. What is the relationship between minerals and indoor air pollutants, and is there a ‘safe’ level of air pollutants for vulnerable mineral species? This requires dose-response testing of mineral species in combination with indoor air pollutants such as carboxylic acids in



varying concentrations. Change to specimens will be assessed using the methodology developed under 1 and 2.

4. What is the effectiveness of current conservation treatments? A methodology will be developed to assess the use of microenvironments as a standard way of preserving vulnerable specimens.

The initial part of the research will center on reviewing current knowledge of change to geological specimens, and how chemical and structural changes translate into damage. This will be followed by the development, in conjunction with curators and conservators, of a protocol for condition assessing specimens, involving discussions, stakeholder consultation and focus groups. Experimentation will then be set up in the laboratory to test various forms of existing monitoring technology, such as XRD, FTIR, laser scanning and digital image correlation. Additional experimentation will be set up in the laboratory with multiples of various mineral species and carboxylic acids in different concentrations; samples will be investigated using the techniques identified above.

Academic entry criteria: We welcome students with any good chemistry, engineering, mineralogy, geochemistry or geosciences undergraduate qualifications.

Training path: The student will be part of the EPSRC Centre for Doctoral Training SEAHA (Science and Engineering for Arts, Heritage and Archaeology). Students will register for the one-year MRes SEAHA at UCL in year 1 and then register at the University of Oxford for years 2-4 of the studentship. The student will be encouraged to spend time working in the laboratories at the National Museum Cardiff.

Funding: The SEAHA Studentship will cover home fees and a stipend of up to a maximum of £18,654 per year (to be confirmed at point of entry) for eligible applicants (<http://www.seaha-cdt.ac.uk/opportunities/eligibility-criteria/>), and a substantial budget for research, travel, and cohort activities. EU students may be eligible for fees only and non-UK/EU applicants are not eligible for a stipend or fees.

Enquiries: Please contact the academic supervisor for further information (heather.viles@ouce.ox.ac.uk)

Application deadline: midday on Friday, January 12th

How to apply:

Your application should include:

- A substantial covering letter (2-3 pages) including:
 - a clear explanation of your motivation for applying for this project
 - a statement of your understanding of your eligibility according to the information provided at: <http://www.seaha-cdt.ac.uk/study-with-us/studentships/eligibility-criteria/> and <https://www.epsrc.ac.uk/skills/students/help/eligibility/>
- A short research proposal (max. 2000 words) taking into consideration the project research questions
- A full CV
- Contact details for two academic references (names, postal and email addresses)



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- Proof of meeting the UCL English language proficiency requirements where necessary. For SEAHA candidates, an advanced level certificate is normally required (details of English language proficiency requirements can be found at:

<http://www.ucl.ac.uk/prospective-students/graduate/life/international>).

Interviews are likely to take place on January 25th. Please mention in your covering letter if you will not be available on this day.

The application should be submitted by email direct to the University of Oxford SEAHA Administrator and not by the UCL online admissions system.

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