



# SEAHA

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

## **SEAHA Studentship: Hyperspectral imaging for heritage: From books to bricks**

This interdisciplinary project will explore the practical use of Hyperspectral Imaging, once a niche technique used by astrophysicists, in the field of heritage science. Hyperspectral imaging is now being applied to a wide range of applications, e.g. food science, video systems, remote sensing, medical and materials science but is also becoming increasingly applied within the heritage sector. The University of Oxford has recently invested in advanced hyperspectral imaging equipment to be housed in the Bodleian Library. The aim of this project will be to evaluate the use of this technique across the heritage resources of the University (including library books and papers, museum objects, and Oxford's architectural and archaeological heritage).

This is an exciting project for candidates looking to build knowledge and skills in material science, spectroscopic techniques, product development (equipment and technique), and the use of non-standard software for visualising and interpreting hyperspectral data. The successful candidate will have a first or upper-second degree in engineering, material science, conservation science, chemistry, physics (or related aspects of science and/or engineering), and a keen interest in cultural heritage. Candidates with proven experience in the use of hyperspectral imaging in other fields may also be considered from disciplines such as geography, environment sciences, or astrophysics. This challenging interdisciplinary project will enable you to seek employment in any number of multidisciplinary environments: from academia to industry.

The following concrete research questions are of interest:

1. How can hyperspectral imaging be best applied to extract information from manuscripts within the Bodleian Library and other collections?
2. What are the best protocols and procedures to reveal hidden text and map materials and pigments on such manuscripts and what are the optimum ways of presenting the information?
3. How can hyperspectral imaging be best applied to provide information from archaeological and architectural heritage materials within the University of Oxford?
4. What are the best protocols and procedures to reveal hidden relief details, the presence and nature of biological/organic growth on and within materials, and signs of change and deterioration?

The project is part of the EPSRC Centre for Doctoral Training in Science and Engineering in Arts, Heritage and Archaeology at University College London, University of Oxford and University of Brighton ([www.seaha-cdt.ac.uk](http://www.seaha-cdt.ac.uk)), in collaboration with the Bodleian Libraries ([www.bodleian.ox.ac.uk](http://www.bodleian.ox.ac.uk)) and Headwall Photonics (<http://www.headwallphotonics.com/>). Funded by the Engineering and Physical Sciences Research Council (EPSRC) through the Centre for Doctoral Training and co-funded by The University of Oxford Fell fund, the four year doctoral research programme will be supervised jointly by The University of Oxford School of Geography and the environment (<http://www.geog.ox.ac.uk/>), UCL Centre for Digital Humanities (<https://www.ucl.ac.uk/dh>), The Bodleian Libraries, ([www.bodleian.ox.ac.uk](http://www.bodleian.ox.ac.uk)), and Headwall Photonics (<http://www.headwallphotonics.com/>) For further details contact David Howell [David.Howell@bodleian.ox.ac.uk](mailto:David.Howell@bodleian.ox.ac.uk) who will be the heritage supervisor. The academic supervisors will be Professor Heather Viles (University of Oxford) and Professor Melissa Terras (UCL).

SEAHA is a Doctoral Training Centre at University College London (UCL), University of Oxford, and University of Brighton. SEAHA is funded by the Engineering and Physical Sciences Research Council (EPSRC).



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As a SEAHA student, you will have unparalleled access to research infrastructure and expertise across three universities and almost 50 research, heritage and industrial partners. In addition to the university doctoral training requirements, SEAHA students take part in an exciting range of cohort activities, ranging from residential events and group projects, to conferences and careers events. Please visit the SEAHA website ([www.seaha-cdt.ac.uk](http://www.seaha-cdt.ac.uk)) for details.

The SEAHA Studentship will cover home fees and a stipend of up to a maximum of £16,726 per year (current rate) for eligible applicants (<http://www.seaha-cdt.ac.uk/opportunities/eligibility-criteria/>), and a substantial budget for research, travel, and cohort activities. After the first MRes year at UCL the student will transfer to the University of Oxford for years 2 to 4.

The application should include:

- A covering letter clearly stating your motivation
- The UCL graduate application form which can be downloaded via UCL's web site: <http://www.ucl.ac.uk/prospective-students/graduate/apply/apply-now/ucl-graduate-application-form.pdf>
- Two academic references
- A copy of your degree certificate(s) and transcript(s) of degree(s),
- 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/apply/english-language/index>)
- A short research proposal (max. 2000 words) written by taking into consideration the above research questions.

The award will be subject to a Grant Agreement between The University of Oxford and Headwall Photonics.

The applications should not be submitted by UCL online admissions system. Instead, they should be sent directly to: [manager@seaha-cdt.ac.uk](mailto:manager@seaha-cdt.ac.uk)

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UCL Taking Action For Equality.

Application deadline: 1 March 2015.

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