

**AHRC Collaborative Doctoral Partnership
Research Studentship 2017**

**Nottingham Trent University, School of Science & Technology, and the British Museum,
Department of Scientific Research**

Optical Coherence Tomography (OCT) for the conservation and interpretation of vitreous materials in museums collections

Applications are invited for an AHRC Collaborative Doctoral Partnership PhD studentship, to be undertaken at Nottingham Trent University (School of Science & Technology) and the British Museum (Department of Scientific Research). The studentship is for a three-year (full-time) project entitled '***Optical Coherence Tomography (OCT) for the conservation and interpretation of vitreous materials in museums collections***', to commence on 1 October 2017. The student will also be offered an additional (remunerated) six-month placement in conservation science at the British Museum during the PhD to further develop and expand their skills. The student will need to spend concentrated periods of time both at Nottingham Trent University and at the British Museum. This is an interdisciplinary project involving close collaboration between physicists, conservators and conservation scientists.

Summary of Project:

Optical coherence tomography (OCT) is a cutting-edge imaging technique that produces 3D images of surface and subsurface microstructure of transparent and semi-transparent materials. It is a powerful tool for the study of museum objects as it can produce images of cross-sections without contact with the object. Information on the composition of vitreous materials will also be collected using spectroscopic techniques and combined with the OCT results, thus giving an overall view of the objects in 3D. In the proposed project, you will research into an effective method of extracting and combining the structural, chemical and optical properties from the OCT and various spectroscopy data for studying manufacturing techniques and degradation processes in vitreous museum artefacts. The project will then focus on different case studies at the British Museum.

The British Museum has a collection of some 230 Limoges painted enamels. These are known to suffer from localised deterioration and this is often limited to specific colours, particularly blue, mulberry and purple. As the deterioration of Limoges enamels is poorly understood, there are currently no effective treatments for Limoges enamels. OCT investigation in 3D subsurface microstructure will allow a better understanding of the deterioration processes, which is a key step towards devising remedial conservation treatments. Another case study will involve determining the manufacturing techniques of ancient Egyptian faience. The British Museum has a large collection of ancient Egyptian Faience spanning the period from the second millennium BC to the fourth century AD. The examination of the microstructure using OCT will be used to distinguish between different manufacturing techniques.

The outcomes of this project will be of great relevance to other cultural heritage institutions holding vitreous objects in their collections.

Funding:

This Collaborative Doctoral Partnership PhD studentship is funded by the AHRC. The full studentship award for students with UK residency* includes fees and a stipend of £14,553 per annum plus £550 p.a. additional stipend payment for Collaborative Doctoral students for 3 years. In addition, the Student Development Fund (equivalent to 0.5 years of stipend payments) is also available to support the cost of training, work placements, and other development opportunities. Students with EU residency are eligible for a fees-only studentship award which does not cover the stipend. International applicants are normally not eligible to apply for this studentship. The British Museum will provide up to

£1000 a year for three years and up to £500 in the fourth year to cover travel and other costs the student incurs in traveling to carry out research at the Museum and other locations. Both partners will provide opportunities for training and career development.

*UK residency means having settled status in the UK that is no restriction on how long you can stay in the UK; and having been "ordinarily resident" in the UK for 3 years prior to the start of the studentship that is you must have been normally residing in the UK apart from temporary or occasional absences; and not been residing in the UK wholly or mainly for the purposes of full-time education.

Eligibility:

Applicants must have a good first degree (usually a minimum 2:1) or a Masters postgraduate degree (or other equivalent experience) in physics, chemistry, conservation, archaeological science, conservation science, materials science or a related physical science discipline. They should be highly motivated individuals with a keen interest in art history, archaeology or conservation, and in conducting interdisciplinary research. The project would suit a candidate interested in a career in conservation science or archaeology or a scientist with an interest in applying cutting-edge scientific techniques and complex data processing methods to challenging questions such as those posed by cultural heritage artefacts. Students must also meet the eligibility requirements of the UK Research Council for graduate students. The minimum English language proficiency requirement for candidates who have not undertaken a higher degree at a UK HE institution is IELTS 6.5 (with a minimum of 6.0 in all skills).

The closing date for applications is **12:00 noon (UK time) 25th April 2017.**

Further Information and application:

For informal enquiries, please contact the main supervisors Professor Haida Liang (haida.liang@ntu.ac.uk) or Dr Capucine Korenberg (ckorenberg@britishmuseum.org). Application is by covering letter, CV and online application form, and should be sent to doctoralschool@ntu.ac.uk and copied to haida.liang@ntu.ac.uk.

Application packs can be obtained from

http://www4.ntu.ac.uk/research/ntu_doctoral_school/studentships/index.html