



Krakow 25.05.2019

Adjunct Professor in Cultural Heritage Research Group of the Jerzy Haber Institute of Catalysis and Surface Chemistry, Polish Academy of Sciences

1. The institution

The Institute (<http://www.ik-pan.krakow.pl>) is the only scientific institution in Poland and one of very few in the world devoted entirely to research in catalysis and chemistry of interfaces. It pursues interdisciplinary studies of phenomena occurring at phase interfaces, combining significant aspects of chemistry, physics, material engineering, and more recently biology, medicine and heritage science.

The institute is dedicated to advancing the field of heritage science, in which science and the humanities overlap. The Institute is home to Cultural Heritage Research Group (CHR), advancing understanding of the structure and properties of historic materials, mechanisms of their deterioration, and measures to conserve and protect them. The CHR has vast experience in the international research cooperation in this area illustrated among others by several European projects in which it participated. The basic research is linked to extensive practical work also with international partners which included in recent years the Victoria and Albert Museum in London, the National Trust UK and the Getty Conservation Institute in Los Angeles.

Recently, after several years of research work in the Institute for the Preservation of Cultural Heritage at Yale University, Dr. Łukasz Bratasz won the 'Polish Returns' programme financed by the Polish National Agency for Academic Exchange (NAWA). The aim of the NAWA project is to develop physical model of pictorial layers of paintings (numerical model based on properties of historic materials determined experimentally), to elucidate mechanism of crack formation in the layers, and thus enhance preventive conservation practice in museums.

The implementation of the NAWA project resulted also in receiving CollectionCare research project financed under the Horizon2020 programme of the European Commission. The aim of the project is to elucidate mechanism of the crack formation in paintings on canvas, analysis of the impact of conservation treatment on the susceptibility of objects to variations of microclimatic parameters and the development of novel methods of preservation of museum's collections.



A full-time, 33-months position of an Adjunct Professor is open in the Cultural Heritage Research Group of the Institute.

2. The research in which candidate will participate

The Adjunct Professor reporting to the head of the CHR group will work on development of a comprehensive mechanical model of historical, aged paint layers - innovative at the global scale. The paint layer is a complex assembly of strata of humidity-sensitive materials which have - over centuries - aged, cracked and delaminated. Cracks join up into the network – the craquelure pattern (CP) - which is a distinctive characteristic of materials and physical structure of the artwork, an outcome of the construction and painting techniques employed by the workshop and the artist.

The Adjunct Professor will be responsible for:

- building a database of material properties, including fracture toughness, for historical materials used in paint layers;
- developing a comprehensive 3D mechanical model of historical paint layers, especially in canvas paintings, which would allow for better understanding of mechanisms and processes involved in CP formation based on finite element modelling using COMSOL Multiphysics software for analysis of strain/stress fields;
- determining vulnerability of historical paint layers with developed CPs to relative humidity variations, also after conservation treatments;
- application for new projects.

3. Eligibility

Candidates must have **Ph.D. in material science, mechanical engineering, physics or related field.**

Experience in stress/strain finite element modelling, fracture mechanics, material analysis and characterization, mechanical testing. Excellent written and verbal skills, fluency in English language as well as an interest in collaborative and multi-disciplinary research are essential.

4. Remuneration

The level of remuneration is 6000-6500 PLN/month depending on candidate experience including health benefits.

5. Review of applications will begin immediately, and applications will be accepted until September 18, 2019. Decision will be taken until September 30, 2019.



6. Application should include:
 - a. cover letter,
 - b. consent to the processing of personal data for the needs necessary to carry out the recruitment process in accordance with the Act of 29 August 1997 on the protection of personal data (t.j. Dz. U. z 2016 r. poz. 922, z 2018 r. poz. 138, 723.) and fill in the form „Obowiązek informacyjny dla osób mających podjąć pracę/współpracę” confirming acquainting with its content. The form is available on the institute website [[FORMULARZ](#)],
 - c. a copy of the diploma of granting Ph.D. degree,
 - d. CV (including information about including parental leave, voluntary work, etc.),
 - e. at least one opinion about the Candidate from the previous supervisor, preferentially issued by an independent researcher,
 - f. list of scientific achievements.

7. The application should be sent in electronic form to: ncikifp@cyf-kr.edu.pl, with the note "CHR - adjunct".