Warwick Collaborative Postgraduate Research Scholarship (WCPRS)

Collaboration between the University of Warwick and Diamond Light Source Ltd

**Supervisors:** Professor Peter J Sadler FRS (Warwick) and Dr Paul Quinn (Diamond)

**Title:** Organometallic anticancer complexes

**Start date:** October 2016; Duration: 3.5 years

The project will involve studies of organometallic anticancer complexes in an integrated multidisciplinary (‘systems pharmacology’) approach to understanding their molecular cellular chemistry and mechanism of action.

The Sadler group at Warwick has discovered promising anticancer activity amongst half-sandwich organometallic complexes of ruthenium, osmium, rhodium and iridium. Some are candidates for pre-clinical development. They have a novel mechanism of action, attacking the redox state of cancer cells which is already weakened by the presence of malfunctioning mitochondria. Some are active hydrogenation catalysts that can induce oxidative or reductive stress in cancer cells. We synthesise and characterise complexes, study chemistry and biochemistry relevant to their cellular activity, and investigate their mechanism of action, including the identification of specific target sites.

A key aspect of this project will be use of high resolution nanoscale imaging, spectroscopy and tomography. The student will spend 50% of their time based at the new hard x-ray nanoprobe beamline I14 at Diamond Light Source ([http://www.diamond.ac.uk](http://www.diamond.ac.uk)) exploiting this beamline and others to study interactions of these organometallic complexes within cells.

**Eligibility:** Applicants should hold a minimum of a UK Honours Degree at 2:1 level or equivalent in a relevant subject. Due to restrictions on the funding, this studentship is open to UK/EU students only.

**Funding:** The studentship provides UK/EU tuition fees and a stipend at the standard research council level as well as funds for consumables.

**Applications:** should be made as soon as possible using the online application system of the University of Warwick (PhD in Chemistry course code: P-F1P0):

[http://www2.warwick.ac.uk/fac/sci/chemistry/gstudy/application/](http://www2.warwick.ac.uk/fac/sci/chemistry/gstudy/application/)

They should also send a copy of their CV and cover letter to Professor Sadler and Dr Quinn using the email addresses below.

**Closing Date:** 25 April 2016. We intend to interview short-listed candidates on Friday 29th April.
For further information please contact Professor Peter Sadler: P.J.Sadler@warwick.ac.uk or Dr Paul Quinn: paul.quinn@diamond.ac.uk

References

Potent organo-osmium complex shifts metabolism in epithelial ovarian cancer cells
J.M. Hearn, I. Romero-Canelón, A.F. Munro, Y. Fu, A.M. Pizarro, M.J. Garnett, Ultan McDermott, N.O. Carragher, P.J. Sadler

Organoiridium Complexes: Anticancer Agents and Catalysts
Z. Liu, P.J. Sadler

Transfer hydrogenation catalysis in cells as a new approach to anticancer drug design
J.J. Soldevila-Barreda, I. Romero-Canelón, A. Habtemariam, P.J. Sadler

A systems approach to metal-based pharmacology
I. Romero-Canelón, P.J. Sadler