EUROPEAN SYNCHROTRON RADIATION FACILITY
INSTALLATION EUROPEENNE DE RAYONNEMENT SYNCHROTRON

ESRF

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Prof. P.J. Withers, FREng.
Director of the Henry Moseley Imaging Facility
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Date : Tuesday 2 June 2015

Dear Prof. Withers,

As Director of Research of the European Synchrotron Radiation Facility (ESRF) in Grenoble, I fully support your ERC grant application on Correlative Tomography. Your vision of bringing together multiple instruments to cover multiple length scales and timescales is very much in line with our own vision of increasing the level of information we can acquire during experiments.

Your pioneering work on industrial applications of synchrotron beams has opened new research opportunities at large scale photon facilities not only for academic research but most importantly for industrial research, performed either in collaboration with academics or directly by industrial researchers. I was pleased to see that this was recognised in the Royal Society recently through their Armourers and Braisers Prize for 'pioneering use of neutron and hard x-ray beams to map stresses and image defects in industrial scale components and devices'. This aspect of your work is certainly unique in Europe with a direct economical return.

The ESRF has a long history of collaboration with you including the exchange of PhD students and Post-Docs. The challenging nature of your projects has constantly inspired our own scientists to develop new applications for Materials Engineering, often in collaboration with you.

As you are well aware, the ESRF has started an ambitious upgrade programme and is currently renewing parts of its beam line portfolio centred around the big challenges in the fields of sustainable developments for energy, health, and environment. I consider research in Materials Engineering as a core activity, in particular for the development of a sustainable economy. The integration of your project into our ongoing efforts to boost the impact of our publicly funded research projects would certainly allow the European research community, both industrial and academic, to profit from your experience.

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The ESRF operates a number of experimental stations which are actively working on microstructural problems in the mechanical engineering sciences. These activities are based on the availability of sources for highly penetrating X-ray beams which are a trademark of the ESRF as the prime European high energy photon source. I was pleased to see that your recent paper in Phil Trans has focused a spotlight on the unique capabilities of the ID15 beamline as one of the few world-wide with the penetration to observe engineering materials and thick components in diffraction and imaging. Your proposal to extend what can be achieved on ID15 within a correlative tomography framework is very timely and fits perfectly into our strategy for the development of analytical tools for materials science on the micro- and nano-scale. Your proposed experimental setup can be easily integrated within the high energy beamline ID15.

We are in the process of upgrading beamline ID15 for our programme in Materials Chemistry and Materials Engineering with a total investment of 6 M€. The beamline will be ready to host you as the prime collaborator for the development of the Materials Engineering programme from 2016 onwards. The project includes a complete renewal of the infrastructure, x-ray optics, sample environment, detectors, and computing environment. Your involvement will allow us to make your expert knowledge and the instrument developments you propose available to a large community of European researchers. To this end we would be pleased to host a researcher funded by your ERC project to work with our team on developing the instrumentation and carrying out key proof of capability experiments. Prof. Cernik, leader of WP 2.1 on elemental CT is, in fact, already staying with us for one year to develop the technique further.

The ESRF would be happy to work with you on the basis of a long-term project, which constitutes one of the two access routes to our facilities. We are ready to set up a collaborative agreement for your research project including the provision of office space and technical help form our expert staff for the realization of your project. In summary, I look forward to working together with you to realize these exciting possibilities for the European research community.

I wish you every success.

Yours

Harald Reichert
Director of Research

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