Helmholtz Call for 2018 CSC Fellowship Applicants

Helmholtz Centre: Forschungszentrum Jülich GmbH – www.fz-juelich.de

Department/Institute: Institute for Energy and Climate Research, Materials Microstructure and Properties (IEK-2)
http://www.fz-juelich.de/iek/iek-2/EN/Forschung/Corrosion/Corrosion_node.html

Supervising scientist: Dr.-Ing Dmitry Naumenko

University for Registration (for those looking for a dissertation): University in China

Research Field: Materials Science (High-Temperature Corrosion)

Position: PhD Student □ Sandwich PhD Student ***X***

Research Area:

High-entropy alloys (HEA) is a new class of materials, which are based on five or more elements with equal or similar concentrations, such as the so-called Cantor alloy (Fe-20Ni-20Co-20Cr-20Mn, at.%).
Materials based on the HEA concept possess attractive mechanical properties for high-temperature applications, such as high hot hardness and yield strength along with reasonable room temperature ductility. However, the oxidation resistance of many HEA's at high-temperature has not been sufficiently studied up to now. In the proposed project the PhD candidate will study the oxidation behaviour of several HEAs, including measurements of scaling kinetics, detailed analyses of the oxidation products and alloy microstructure. Based on the results of the experimental studies, the mechanisms of oxide scale formation will be elucidated and the kinetics of their growth will be modelled. Finally, the alloy compositions will be optimized to achieve an enhanced corrosion resistance at high temperatures.

Specific Requirements:

MSc in materials science, mechanical engineering or comparable degree,
self-motivation,
team-work ability
good communication skills

Duration of stay: 24 months

Work Place: Forschungszentrum Jülich, Germany (near Cologne)

Earliest Start: September 2018

Language Requirement: Very good knowledge of English language, written and spoken. A German language course will be offered parallel to the project.

Name and Address of the Supervisor: Dr.-Ing Dmitry Naumenko, Forschungszentrum Jülich, Institute for Energy and Climate Research (IEK-2), 52425 Jülich, Germany; d.naumenko@fz-juelich.de,