Post-Doctoral Researcher / Scientist

Optical Characterisation and Spectroscopy of Up-converting Inorganic Nanomaterials

Job Description:

The “Nanophotonics for Energy” division was established at KIT in April 2014 within the Institute of Microstructure Technology (IMT) and the Light Technology Institute (LTI). We have access to all of the state-of-the-art research facilities within the National Research Centre of the Helmholtz Association. We are currently looking to employ a post-doctoral scientist to expand our capabilities within our Third Generation Photovoltaics group based around “Optical Characterisation and Spectroscopy of Up-converting Inorganic Nanomaterials”. This research would be conducted within the framework of a very close collaboration with a German industry partner and working as part of a small team on this R&D project.

This field of research covers encompasses:

- Establishing and refining techniques for measurement of photoluminescent quantum yields (PLQY) as well as photoluminescence lifetimes (PL-τ) across the entire ultraviolet-visible-near infrared wavelength range;
- Extensive optical and spectroscopic characterisation of up-converting materials based on oxide, fluoride and other host materials;
- Accurate determination of absolute PLQY of materials, in powder, liquid, and solid form;
- Determination PL-τ and energy transfer mechanisms between sensitizer and emitter ions;
- Understanding the role of defects in quenching of the photoluminescence;
- Correlation of UC performance with material quality.

Generally, this involves the setting-up of required characterisation equipment, as well as detailed experimental planning, and performing a wide range of optical characterisation and spectroscopic R&D. Given the very close cooperation with industry, being able to deliver to tight deadlines, good time management, as well as excellent written and oral communication skills are essential. Experience in publishing in high-impact journals as well as writing concise reports is critical, while a familiarity with the patenting process would be an advantage. The successful candidate will be able to conduct research independently, as well as being able to work within a small team to deliver on the required project milestones.

Qualifications: PhD in Physics / Materials Science or equivalent

You have completed a PhD and demonstrated independent research skills through publication in peer reviewed international journals, giving oral presentations at international conferences, and have experience with the preparation of research funding proposals. Experience with optical spectroscopy of photon up-converting materials for both absolute PLQY determination as well as conducting and analysing PL lifetime measurements will serve as a good foundation to the position. Experience with optical design programs (Zemax, Raytracing) is beneficial as well.

Affiliation: KIT – Institute of Microstructure Technology (IMT) – Nanophotonics for Energy

C/o KIT Campus North
Hermann-von-Helmholtz-Platz 1
76344 Eggenstein-Leopoldshafen, Germany
http://www.imt.kit.edu/1291.php

Deadline: Applications will close 27 April 2015

Duration: Three years

Salary: Remuneration shall be based on the Collective Agreement for the Public Service Sector.

Start Date: 1 June 2015

Contact: Prof. Dr. Bryce S. Richards, Tel: +49(0)721/608-26562, Email: Bryce.Richards@kit.edu, Professor of Nanophotonics for Energy - Faculty of Electrical Engineering and Information Technology, Co-Director of both Institute of Microstructure Technology (IMT) and Light Technology Institute (LTI)

Applications: Please make sure all of the following documents are supplied within an application: i) up-to-date CV, ii) publication list, iii) degree certificates, iv) academic transcripts, and v) contact details for three references.