

EARLY STAGE RESEARCHER

James D. Pickering

PROJECT: Ultrafast Dynamics of Molecules in Helium Droplets

Host institution: Aarhus University

Supervisors: Henrik Stapelfeldt, Marcel Mudrich, Thomas Binhammer

Start date: 01/10/2015



AARHUS UNIVERSITET

CURRICULUM VITAE

- Born 29/04/1993, Leeds, UK.
 - University of Oxford, 2015
 - MChem Chemistry.
 - “Applications of Fast Imaging Cameras in Mass Spectrometry” - supervised by Mark Brouard, with John Eland.
 - Aarhus University
 - PhD Chemistry
 - “Ultrafast Dynamics of Molecules in He Nanodroplets” - supervised by Henrik Stapelfeldt.
- Publications to date:
 - “Three-fold Covariance Imaging of Laser Induced Coulomb Explosions” - Pickering *et al. Journal of Chemical Physics*, 2016.
 - “Dissociation of Multiply Charged ICN by Coulomb Explosion” - Eland *et al. Journal of Chemical Physics*, 2016.

SCIENTIFIC SCOPE OF THE PROJECT

- Ultrafast dynamics of molecules embedded in Helium nanodroplets.
- Effect of droplet environment on UV photochemistry.
- Understanding excited state dynamics inside a He droplet.
- Providing a bridge between gas and solution phase dynamics.

SCIENTIFIC ACTIVITIES AND GOALS IN PROGRESS

- Research Activities:
 - Use of light heteroatoms in Coulomb explosion imaging.
 - UV-IR pump-probe spectrometry of aromatic halides.
 - Understanding the effect of the He droplet on UV photochemistry.

- Conference Activity:
 - Spectroscopy and Dynamics Group Meeting, Nottingham, UK, 2015.
 - Southern Universities SDG, Oxford, UK, 2015.
 - PImMS Consortium General Meeting, 2014, 2015.
 - MEDEA Winter School, Milan, 2016.
 - MEDEA Summer School, Crete, 2016.

SECONDMENTS, OUTREACH ACTIVITIES AND SOFT SKILLS TRAINING

- Planned secondments:
 - Freiburg University, Dr. Marcel Mudrich.
 - VENTEON, Dr Thomas Binhammer.
- Outreach Activities:
 - Photonics Explorer to Aarhus Statsgymnasium.
 - Organised lab tours for Aarhus Statsgymnasium.
 - Planning further, similar, outreach activities.
- Soft Skills Training:
 - 5 ECTS Course “Introduction to Science Teaching”.

CAREER DEVELOPMENT PLAN AND FUTURE ACTIVITIES

- Scientific:
 - Extend current pump-probe setup to include tunable UV-IR, or UV-UV.
 - Continued study of ultrafast processes in He droplets.
 - Torsional Motion inside He droplets.

- Other:
 - Undertake further outreach activities with different schools.
 - Continued attendance at MEDEA JJC's, Webinars, Schools.