

**3 yr PhD position
at Leeds University, UK,
in collaboration with
the Leuven University, Belgium,
in the field of astrochemistry**

Interdisciplinary project on the stellar winds around evolved stars at Leuven University (Belgium) and the Leeds University (UK) funded by the ERC-CoG_2014 grant AEROSOL (PI. L. Decin, University of Leuven).

Application deadline 30th June 2017.

The project and the position

We seek an excellent candidate for a PhD research position ready to play a key role in the interdisciplinary ERC Consolidator Grant **AEROSOL** (2016-2020, PI. Prof. Leen Decin). The aim of the project is to boost our understanding of the physics and chemistry characterizing the stellar winds around evolved stars. The project builds upon novel observations, detailed theoretical wind models, and targeted laboratory experiments (see <http://fys.kuleuven.be/ster/Projects/aerosol/aerosol>). The candidate will interact closely with a team consisting of astrophysicists, chemists, and computational mathematicians.

Specifically, we seek a candidate with interest both in laboratory chemistry and in chemical modelling. In a first part of the project, the candidate will perform laboratory experiments aiming to understand the reactivity of Ni and Al in environments mimicking the winds of evolved stars. In a second phase, the student will study silicate dust formation using ab-initio quantum theory to establish likely reaction pathways occurring in stellar outflows.

The candidate will perform his/her study at the University of Leeds supervised by Prof. John Plane (University of Leeds) and Prof. Leen Decin (University of Leuven, University of Leeds), working in collaboration with Dr David Gobrecht (University of Leuven).

Candidates should have an interest in astrophysics, astrochemistry and/or physical chemistry. The experimental work will be carried out in the modern and fully-equipped research laboratories at the Universities of Leeds. The (quantum) chemical computations will use the HPC facilities of the University of Leuven. The PhD student will interact closely with other team members at the Universities of Leuven and Leeds.

Institute of Astronomy - University of Leuven

The Institute of Astronomy (IoA) of the Leuven University in Belgium is a young and vibrant research group of some 50 scientists, engineers and administrative staff (fys.kuleuven.be/ster), including 6 full-time and 3 part-time professors. The institute is an expertise centre in stellar physics and is active in several international consortia and collaborations, involving telescopes at observatories worldwide and in space. Members of IoA have access to parallel computing facilities at Leuven University. The IoA is responsible for the organisation of the 2-year Master in Astronomy & Astrophysics of the Faculty of Science and owns the 1.2m Mercator telescope at Roque de los Muchachos, La Palma Observatory, Canary Islands. The institute has a long tradition in instrumental, observational, and theoretical studies of the late stages of evolution of low and intermediate mass stars.

School of Chemistry - University of Leeds

The Atmospheric and Planetary Chemistry (APC) Research Group within the School of Chemistry <http://www.chem.leeds.ac.uk/research/groups/atmospheric-and-planetary-chemistry.html> consists of ~40 scientists (3 Professors, academic staff, postdoctoral fellows and PhD students). Research into the Earth's atmosphere focuses on field measurements of key species in the atmosphere, laboratory studies of chemical oxidation of volatile organic compounds and the chemistry of meteor-ablated metals in the upper atmosphere, and detailed modelling using the Master Chemical Mechanism and the Whole Atmosphere Community Climate

Model. The Planetary Chemistry research uses a combination of laboratory work, observations and modelling with an enhanced focus on chemistry at low temperatures using a pulsed Laval expansion, specialised flow tubes and theoretical models. The experience in combustion and high temperature pyrolysis chemistry is relevant for the conditions of 'super Earth' and 'hot Jupiter' exoplanets. The Group has extensive collaborations within Leeds (Physics and Astronomy, Institute for Climate and Atmospheric Science), nationally (National Centre for Atmospheric Science) and internationally (NASA, JPL and many university departments worldwide).

Conditions

The successful applicant will perform research in the context of **AEROSOL**. The PhD student will be able to take up personal training in science and people management, science communication, and grant application writing with the aim to develop a personal independent career track. The selected candidate will be offered a 3-year studentship, with a starting date between 1 July 2017 and 1 January 2018. In their application, candidates are requested to indicate their preferred starting date.

Requirements and instructions to apply

Applicants must possess a Master's degree in (astro)physics, chemistry or mathematics, or an equivalent diploma. High proficiency in English is assumed. Applications must include:

- a Curriculum Vitae;
- a statement of research interests (maximum 2 pages);
- a letter detailing your specific qualifications for the position and your career/educational goals (maximum 1 page);
- two letters of recommendation from people well acquainted with your academic achievements. The letters are to be submitted separately to the address mentioned below.

Applications should be made using the University On-line Application System, where you can upload your supporting documents directly onto the system:

http://www.leeds.ac.uk/info/130206/applying/91/applying_for_research_degrees

Please note: this opportunity is only available to those eligible for the UK/Non-UK EU fees rate.

http://www.leeds.ac.uk/info/102040/fees_and_costs/104/research_degrees_fees

The short-listed applicants will be invited for an interview (live or via skype).

More information can be obtained by contacting:

Prof. L. Decin Institute for Astronomy
Department of Physics and Astronomy, KU Leuven Celestijnenlaan 200D, 3001 Heverlee, Belgium
Leen.Decin@kuleuven.be
++32-16-32 70 41

Prof. J. Plane
Professor of Atmospheric Chemistry
School of Chemistry
University of Leeds, Leeds
LS2 9JT, UK
J.M.C.Plane@leeds.ac.uk
++44-113-343-8044