

PhD position in astrochemistry and star formation - The origins of chemical variability in the protostellar environment

ORGANISATION/COMPANY: Nicolaus Copernicus University

RESEARCH FIELD: Astrophysics

APPLICATION DEADLINE: 20/08/2022 21:00 - Europe/Brussels

LOCATION: Poland › Toruń

TYPE OF CONTRACT: Temporary

JOB STATUS: Full-time

HOURS PER WEEK: 40

OFFER STARTING DATE: 03/10/2022

REFERENCE NUMBER: HC_astro_chemistry

Offer Description

This position is part of the Pillars of Protostellar Evolution project led by Dr Hannah Calcutt. The environments in which stars form are known to contain a rich chemistry. The development and complexity of this chemistry is tied to the physical properties of the star-forming region, especially its evolutionary stage. The aim of this project is to significantly expand our understanding of chemical variability in galactic star-forming regions. The main part of the research will be identifying molecules in star-forming regions that have not previously been identified. The molecular abundances and excitation temperatures will be computed and compared in different objects and star-forming regions, to build a picture of chemical variation within different families of molecules and in different physical conditions. This will involve single-dish and interferometric observational data reduction and analysis using spectral and chemical modelling methods.

Required initial knowledge and skills of the PhD candidate

- Analytical thinking
- Eager to learn new skills
- Basic knowledge of astronomy and star formation – Some experience in coding
- Programming skills

Expected development of the PhD candidate's knowledge and skills

The candidate will develop skills in sub-mm data analysis, observational and theoretical astrochemistry and an understanding of the frontier of star formation research. The candidate will also develop skills in communication and dissemination of research to different audiences and through different formats (e.g. publications, talks, outreach). Programming and coding skills as well as coding design and management will also be developed. The project involves collaboration with scientists in Sweden, Copenhagen and the USA, offering possibilities to develop skills in teamwork, international collaboration and provide a platform of visibility in the wider research field.

Working environment

The group of Dr Hannah Calcutt is based in the Molecular Astrophysics Laboratory, which is part of the Institute of Astronomy and the Centre of Excellence for Astronomy and Astrochemistry at Nicolaus Copernicus University in Torun, Poland. Nicolaus Copernicus University is the leading research university in Poland, with a community of local and

international researchers and students. Dr Calcutt's group prioritises inclusion, diversity, and welfare on top of scientific excellence in all positions, with a strong focus on skill development that is beneficial for student's future careers across both academia and industry.

Eligibility criteria

- MSc degree in astronomy or a closely related field
- Good English speaking and writing skills

Selection process

There is a multi stage process to the PhD application. The first stage requires the following documents to be sent to hcalcutt@umk.pl.

- Curriculum vitae (CV) in English
- Master's thesis abstract in English
- Cover Letter in English - outlining motivation for pursuing a PhD, statement of the candidate's research interests, experience, and skills
- Two letters of Reference in English
- A copy of the Master's diploma or details of date of obtaining diploma

Please include "PhD Position in Outflows with Dr H. Calcutt" in the subject of the email and name the documents in the format e.g. CV_Name.pdf .

Offer Requirements

REQUIRED LANGUAGES

ENGLISH: Good

Skills/Qualifications

- Analytical thinking
- Eager to learn new skills
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