Two PhD Positions in Atmospheric Science (CLOUD Experiment)

The Experimental Atmospheric Research Group at Institute for Atmospheric and Environmental Sciences **Goethe-University Frankfurt am Main, Germany**, is looking for **two** highly motivated **PhD candidates** in the framework of the Marie Skłodowska-Curie Innovative Training Network CLOUD-MOTION: CLOUD-MObility, Training and InnOvation Network (www.cloud-motion.eu).

The candidates will be employed for 36 months at Goethe-University Frankfurt, and will be part of a network of 15 Early Stage Researchers (ESRs) cooperating in a European network of academic and private institutions.

You have **recently obtained a master degree in physics, chemistry, atmospheric science or similar** with excellent grades and you are a skillful and innovative experimentalist. As this project requires close collaboration within the consortium, candidates are expected to be excellent team players. The participation in workshops and secondments during the project is mandatory.

The PhD project 1 objective will be to conduct measurements of various highly oxidized organic molecules (HOMs) and their clusters (dimers, trimers, etc.) during the CLOUD experiments by operating a nitrate-CI-APiTOF mass spectrometer. Concentration of gaseous sulphuric acid and H_2SO_4 i-mer clusters are measured quantitatively. Other research tasks involve the investigation of clustering thermodynamics/cluster evaporation, and studies to identify specific compounds, eg. peroxy radical formation under various experimental conditions, and separation of isobaric compounds by development and application of improved peak fitting algorithms and higher MS resolution.

The PhD project 2 objective will be to apply a newly developed Thermal Desorption-Differential Mobility Analyzer (TD-DMA) combined with a nitrate-CI-APiTOF-MS during CLOUD experiments. The successful candidate will investigate the chemical composition of aerosol particles in the 2-20 nm size range that are measured with very high sensitivity. Other research tasks involve direct comparison with gas phase and cluster measurements in cooperation with another ESR of the project CLOUD-MOTION at Frankfurt University, identification of key substances condensing on smallest clusters, and investigation of aerosol phase chemical processing.

You will perform dedicated experiments at the CLOUD atmospheric simulation chamber at CERN (http://cloud.web.cern.ch/cloud) within a broad international collaboration. You will operate purpose-built chemical ionization mass spectrometers and particle counters, develop new experimental approaches and analyze and interpret data. Close cooperation with other ESR students of the network is foreseen.

The scientific objectives of CLOUD-MOTION are to investigate the formation of aerosol particles and ice under precisely controlled conditions that closely simulate atmospheric conditions. This process is of high importance for the formation of cloud condensation nuclei and ice nucleating particles that lead to cloud formation and have an impact on climate.

It is planned to conduct studies on the following subjects:
I.) Aerosol nucleation and growth under pristine conditions simulating
    a) the Tropical free troposphere,
    b) the Marine atmosphere.
II.) Aerosol nucleation and growth simulating polluted urban conditions.
III.) Ice nucleation on glassy secondary organic aerosol (SOA).

For the investigation of these topics ESRs of the CLOUD-MOTION network come together at the CLOUD chamber at CERN and perform jointly the dedicated experiments (6-8 weeks per year).
CLOUD is a world-leading experiment at CERN in Geneva for investigating atmospheric aerosol nucleation and growth, cloud formation and aerosol-cloud-climate interactions (http://www.cloud-train.eu/History_of_CLOUD.html). Experiments are carried out as a cooperation of the CLOUD-MOTION partner institutes and others. The CLOUD-MOTION training network will extend the highly successful work of CLOUD from the recent years (cf. Kirkby et al., Nature, 2011; Almeida et al., Nature, 2013, Riccobono et al., Science, 2015; Kirkby et al., Nature, 2016; Tröstl et al., Nature, 2016; Dunne et al., Science, 2016).

Training Programme: The ESRs are required to participate in an extensive training programme organized by the participants of CLOUD-MOTION. This includes 3 summer schools and a winter school, a media training workshop and at least one secondment to another partner institution.

Please send your application material in pdf form including CV, copies of Master's degree and other relevant certificates, and names of two references, before 15 March 2018.

Additional Information: The post is offered under the conditions of the Marie Skłodowska Curie Innovative Training Network Scheme and therefore attracts a salary that is determined by the regulations of this scheme. This equates to 44 000-50 000 € per year (pre-tax and social security; including Marie Skłodowska Curie mobility allowance).

REQUIRED EDUCATION LEVEL: Master Degree or equivalent in atmospheric sciences/chemistry/physics

REQUIRED LANGUAGES: ENGLISH: Excellent

Programming skills (IGOR-PRO/Matlab and Labview/C) and experience in using mass spectrometer instruments are expected.

Eligibility criteria for the applicants (Marie Skłodowska Curie Innovative Training Network Scheme)
Researchers must be early-stage researchers (ESR), i.e. at the date of recruitment be in the first four years (full-time equivalent research experience) of their research careers and have not been awarded a doctoral degree.
'Full-time equivalent research experience' is measured from the date when the researcher obtained the degree entitling him/her to embark on a doctorate (either in the country in which the degree was obtained or in the country in which the

researcher is recruited or seconded) – even if a doctorate was never started or envisaged. Researchers must comply with the mobility rule.
Researchers may not have resided or carried out their main activity (work, studies, etc.) in the country of their host organisation for more than 12 months in the 3 years immediately before the recruitment.
For 'international European interest organisations' or 'international organisations', the researchers may not have spent more than 12 months in the 3 years immediately before the call deadline/recruitment, in the same appointing organisation.
Compulsory national service, short stays such as holidays and time spent as part of a procedure for obtaining refugee status under the Geneva Convention are not taken into account.

Recruitment procedure
Screening will begin immediately and continue until the positions are filled, but all applications received before 15 March 2018 will receive full consideration. Applicants should submit a letter of interest and a complete résumé. In addition, the applicant should provide the names of two individuals familiar with the applicant's professional qualifications for the position to provide references.
To apply, email curtius@iau.uni-frankfurt.de (cc: Dr. Ekaterina Ivanova <ivanova@iau.unifrankfurt. de>) or mail to Prof. Dr. J. Curtius Institute for Atmospheric and Environmental Sciences, Goethe University of Frankfurt, Altenhöferallee 1, 60438 Frankfurt am Main, Germany.

Goethe University Frankfurt is committed to diversity and equality in education and employment.