

Zurich, January 7th 2019ETH Zürich
Dr. Zamin A. Kanji
Group Leader/Senior Scientist
Atmospheric Physics Laboratory
CHN O16.3
Universitätstrasse 16
8092, Zürich, SwitzerlandPhone +41 44 633 61 61
Fax +41 44 633 10 58
zamin.kanji@env.ethz.ch
www.iac.ethz.ch/people/zkanji

PhD position at ETH Zurich in the Atmospheric Physics group in Ice Nucleation starting February 2019

The atmospheric physics group at the Institute for Atmospheric and Climate Sciences at ETH Zurich (IAC-ETH) invites applications for a 3 year PhD position integrated into a Swiss Polar Institute (SPI) project entitled “Ice Nucleating particles In the Greenland Marine Atmosphere (INIGMA)” which is part of and involves participation in the 2019 **GreenLAND Circumnavigation Expedition (GLACE)**. The core activity in this project will require the PhD candidate to partake on a ship cruise aboard the *Research Vessel Akademik Tryoshnikov* (AARI, St Petersburg) ice breaker during a science research cruise to take place in August and September 2019.

The overall goal of INIGMA is to make a breakthrough in understanding the impact of heterogeneous ice nucleation on the formation of persisting mixed-phase clouds over the Arctic Ocean and Greenland. Mixed-phase clouds Arctic strongly affect the regional surface energy and ice mass budgets, but due to the challenges of in-situ measurements in this harsh environment, the concentration of ice nucleating particles, a key parameter in determining the persistence and radiative properties of these clouds remains unknown. The project aims at investigating the contribution of heterogeneous ice nucleating particles in the temperature range -5 °C to -40 °C to the phase partitioning of ice in arctic mixed-phase clouds. This will include measuring the contribution of the sea surface and subsurface waters to the concentration of ice nucleating particles observed in the marine atmosphere around Greenland. Measurements will consist of continuous atmospheric aerosol sampling during the expedition, on-board collection of precipitation and water from the ocean, sampling from the on-board bubble tank, snow, soil and surface water collection during stations with access to Greenland. Aerosol, ocean water, precipitation water samples will also be collected in order to determine the nature of ice nucleating particles (in/organic, proteinaceous and size) and trace chemical species. The presence of other scientific disciplines during the GLACE expedition will promote collaboration with oceanographers and microbiologists providing access to auxiliary measurements of ocean water properties during the expedition.

Techniques that will be important and involved are: operation of flow systems, continuous flow cloud chambers, aerosol sizing and counting instruments, optical particle counting systems and drop freezing methods. In the [ice nucleation group at ETH](#) we have a variety of ice nucleating particle counters, aerosol instruments, mass spectrometers, and optical detection devices for aerosols and cloud hydrometeors.

The successful candidate in addition to holding a MSc (or equivalent) in chemistry, physics, engineering, atmospheric/environmental sciences, or related field should be interested in aerosol experimental and field observations. Knowledge of oral and written English is expected. Data analysis in Igor, MATLAB, Python or similar software is highly desired, and some knowledge of LabVIEW would be an asset, but not necessary. Applications will be accepted until position is filled. To apply, please send a full CV, two letters of reference, and a cover letter to zamin.kanji@env.ethz.ch. Please contact me for additional questions regarding the project.

Sincerely,
Zamin Kanji