Assistant Professor in Biophysics
Nano Life Science Institute, Kanazawa University, Kanazawa, Japan

We are now recruiting a research scientist as an Assistant Professor (non-tenured) at WPI Nano Life Science Institute (WPI-NanoLSI), Kanazawa University. The candidate will develop innovative projects applying high-speed nanoprobe techniques, including atomic force microscopy (HS-AFM) and scanning ion conductance microscopy (HS-SICM), for the observation of dynamic intracellular protein processes.

Specific projects: The Biophysics Lab (http://biophys.w3.kanazawa-u.ac.jp/index.htm) has been developing HS-AFM and HS-SICM imaging techniques to obtain direct mechanistic insights into the dynamic action of protein molecules that cannot be achieved in other ways. HS-AFM is also emerging as a powerful tool to image dynamic processes occurring at the plasma membrane of living cells. However, investigating intracellular protein dynamics requires partially or fully removing the cell membrane before a nanoprobe can be inserted into the cell for high-resolution imaging. Furthermore, cellular structures are often softer compared to purified protein samples on solid supports, and therefore require especially soft imaging techniques, such as SICM. The aim of this research project conducted in the Franz Group at NanoLSI is to develop and apply suitable cell de-roofing methods to expose intracellular organelles for high-speed scanning, while retaining physiological conditions and keeping the exposed intracellular protein complexes functional. Cell de-roofing steps will be closely monitored using light microscopy, as well as a label-free 3D holographic microscopy technique, to ensure minimal cell damage. Your contribution will include some or all of the following: 1. Preparation of functional protein complexes and intracellular organelles from unroofed mammalian cells. 2. Imaging of the exposed cellular organelles by HS-AFM and HS-SICM. 3. Inspection and improvement of developed techniques. 4. Development of AFM and SICM probes for high resolution.

Host Institution: In 2017 NanoLSI was adopted by JSPS as a World Premier International Research Center Initiative (WPI). At NanoLSI we combine the world’s most advanced technologies in bio-scanning probe microscopy to image, analyze, and manipulate the nanodynamics of proteins, metabolites, and nucleic acids both on the surface of and inside cells. In this way, we aim to achieve a fundamental understanding of nano-level mechanisms underlying basic cellular functions, such as proliferation, differentiation, stemness, signal transduction, genome dynamics, and cancer-specific abnormalities. The aim of the entire project can be found at https://nanolsi.kanazawa-u.ac.jp/en/

Requirements: 1. PhD in either biophysics, molecular biology, biochemistry, cell biology, engineering, or a related discipline. 2. Experience working with AFM or SICM is advantageous but not obligatory. 3. Self-motivated and able to work in a multidisciplinary team. 4. Good English communication skills.

Application deadline: January 14th, 2022 Note: We will conduct screening at any time, we may end the offering in about a month after the offering has started. Start Date: February 1st, 2022, or as soon as possible thereafter.

Contract: Non-tenured full-time job. Three-year fixed-term contract. There is a possibility for contract renewal upon review of achievements. The annual salary includes a basic pay of 4,200,000 yen and a special allowance of around 1,320,000 yen in accordance with the rules of Kanazawa University. Salary will be fluctuated by performance and evaluation after adoption. We will provide a start-up research fund of 1,000,000 yen in the first year.

How to apply: Send the following documents to Clemens Franz (clemens.franz@staff.kanazawa-u.ac.jp) via e-mail, with the headline “NanoLSI Assistant Professor, Franz”. 1. CV with a recent photograph 2. List of publications, presentations and other relevant activities, 3. PDF files of published papers (up to three), 4. List of research support (time period, name of grant, title of education/research, and amount of money), 5. Motivation letter, 6. Descriptions of your skills, previous studies (and teaching experiences: not mandatory) on two pages, 7. Reference letters from two scientists including a former academic supervisor.

*We do not cover the transportation expenses associated with the interview.