

Dear Recruitment Committee of KTH Royal Institute of Technology,

I am writing to express my strong interest in the advertised postdoctoral position in MINFLUX single-molecule microscopy at KTH and SciLifeLab. With a Ph.D. in Precision Engineering from the University of Tokyo and a strong track record in developing super-resolution optical methods, I am eager to contribute my expertise in nanoscale imaging while expanding my research into the biomolecular and cellular domain.

During my doctoral studies, I worked extensively on optical interferometry, precision measurement, and super-resolution microscopy. My projects ranged from cleanroom-based semiconductor processes to the design of phase contrast microscopy systems and optical simulations. In a collaboration project CREST, I explored AI-based approaches for building an electronic microscopy guided super-resolution optical microscopy, which strengthened my interest and skills in combining optical physics with computational methods. After my PhD, I joined Bosch to work on advanced driver-assistance systems (ADAS). Although this position was in the automotive industry, it allowed me to deepen my expertise in industrial imaging processing pipelines and sensor data fusion. These experiences broadened my view of how advanced image processing methods can translate into industrial applications at scale. Importantly, they also reinforced my motivation to return to scientific research in microscopy, where I can combine these computational and engineering skills with my background in optics to push the limits of spatiotemporal resolution.

While my background is rooted in precision engineering and computational optics, my graduate research also exposed me to extensive biological super-resolution imaging researches. Building on this interdisciplinary foundation, I am highly motivated to explore the fluorescent super-resolution methods. I am particularly inspired by MINFLUX as the most precise localization approach to date, and I am eager to apply my expertise in probe design, optical instrumentation, and data analysis to challenges in cellular imaging, an area with significant industrial and biomedical demand. My combined experience across biology, optics, and computation—together with the independence demonstrated through the JSPS DC1 Fellowship—makes me well prepared to both advance MINFLUX methodologies and apply them to dynamic biomolecular processes.

I am very enthusiastic about joining the vibrant research environment at SciLifeLab and KTH, where I can contribute to advancing nanoscale imaging while gaining expertise in single-molecule labeling strategies and cell preparation. Looking ahead, I aim to become a researcher who bridges engineering, optics, and molecular life sciences. My goal is to contribute both to the development of novel microscopy methods and to their application in solving fundamental biological questions. This postdoctoral position would not only advance my technical expertise but also provide the interdisciplinary environment needed for me to explore both academic and potential industrial applications of biological super-resolution microscopy.

Thank you for considering my application. I look forward to the possibility of discussing how my skills and experiences can contribute to the success of your team.

Sincerely,

Yizhao Guan