



Optical Systems Engineer

Vaziri Laboratory of Neurotechnology and Biophysics
The Rockefeller University, New York, NY
<https://vaziri.rockefeller.edu/>

Are you interested bringing in your expertise in advanced optics to design and build new optical neurotechnologies and microscopy systems that will help the understanding of the brain? This is an exciting long-term opportunity for a creative highly motivated and ambitious candidate interested in working at the interface of optical systems engineering and neuroscience. The successful candidate will critically contribute to mission of the [Laboratory for Neurotechnology and Biophysics](#) the Rockefeller University by designing, building, and applying new types of multi-photon and other microscopy systems for recording neuroactivity at unprecedented scale, speed and resolution within a highly interdisciplinary and collaborative academic environment that includes joint projects with academic and industrial partners. The ideal candidate must be both conceptually and technically strong, self-driven and highly organized, exhibit a strong work ethics and be able to own and spearhead multiple projects.

Neurobiological discoveries have been fueled in recent years by rapid development of optical imaging tools. Over the last decade the Laboratory of Neurotechnology and Biophysics has developed a wide portfolio of advanced optical neurotechnologies that have enabled large-scale optical interrogation of neuronal population activity at high spatiotemporal resolution across model systems. These capabilities have opened up new opportunities for understanding the fundamental principles of how brain-wide neurocomputation and animal behavior emerges from dynamic interaction of vast and highly distributed neuronal populations in the mammalian brain. Developing and applying new neurotechnologies towards these other neuroscience questions represents a major focus of the lab in the coming years. These efforts have the potential to transform our understanding of how cognitive functions emerge from the connectivity and of neuroactivity as well as provide new avenues for the development of new class of biologically inspired AI algorithms and architectures.

Position Summary

The Optical Systems Engineer will play a pivotal role in conceptualization, design, construction, refinement, maintenance, and application of new custom optical neuroimaging technologies for various ongoing and new neurobiological projects that the lab is collaboratively perusing with internal and external partners which include neuroscientist with various interests and industrial partners. This position requires in depth theoretical and hands-on expertise with optics and optical systems design and instrumentation development. Additional experience in context of multi-photon *in vivo* microscopy including experience working with rodents, animal behavior and/or computational data processing would be desirable but not required. This role presents an ideal opportunity for working at the forefront of optical neurotechnology development within a dynamic and collaborative research environment. The role provides multi-year growth potential with the successful candidate having the opportunity to directly own and lead major long-term research thrust of the lab on neurotechnology development while offering additional growth opportunities into neurobiological or computational neuroscience directions, depending on candidates' backgrounds and interests

Responsibilities

- Contribute to conceptualization and design of new multi-photon high-speed large scale *in vivo* multi-photon optical neurotechnologies and drive their development, characterization, and applications together with neurobiologists
- Redesign and optimization of existing optical platforms and co-development of precommercial prototypes in close coordination with industrial partners
- Adaptation or modification of existing computational data processing and analysis pipelines
- Documentation, development of SOPs or drafting manuscripts for scientific publications and training of more junior scientists
- Support of collaborative project and ongoing technology dissemination efforts

Qualifications and experience

- Ph.D. in physics, optical engineering, electrical engineering, or related field

- A minimum of 2 years of relevant hands-on work experience in a scientific or industrial research environment involving microscopy development, ultrafast optics, non-linear optics or opto-electronic hardware
- Self-driven, highly result oriented, excellent communication and time management skills, the ability to effectively work in a team environment involving academics and industry and motivated by enabling engineering innovations with lasting practical impact
- Basic programming skills (e.g., Matlab, Python, LabView, SolidWorks, CAD)
- A track-record as the lead experimental scientist or engineer for construction of a complex optical, electro-optical or optomechanical system or instrument is highly desirable
- Experience in at least one, ideally multiple of these areas is highly desirable: optical modeling and simulations (e.g., ZEMAX), ultra-fast laser systems, complex free-space optical systems, fiber optics, mechanical design, mechanical fabrication skills, RF electronics and electronics design, optomechanical hardware control (LabView, FPGA, experience with large-scale data processing and cluster computing)

How to apply

Interested candidates should submit their application material, including a cover letter, CV/resume including list of publications and the contact information of at least two references to vaziri@rockefeller.edu and in parallel apply via <https://careers.rockefeller.edu/jobs/2040?lang=en-us> For more information on our work please visit our website at <https://vaziri.rockefeller.edu/>

Salary

The salary of the finalist selected for this role will be set based on various factors, including but not limited to organizational budgets, qualifications, experience, education, licenses, specialty, and training. The hiring range provided represents The Rockefeller University's good faith and reasonable estimate of the range of possible compensation at the time of posting.

Compensation Range: Min USD \$75,000/Yr

Compensation Range: Max USD \$92,000/Yr

The Rockefeller University is an equal opportunity employer – veterans/individuals with disabilities. Qualified applicants will receive consideration for employment without regard to characteristics protected by applicable local, state or federal law, including but not limited to disability and protected veteran status.