

Job Title: Master and Ph.D. fellowships in superconducting THz Chip system

SUNUM is looking for Master and Ph.D. fellowships who will work on a research project funded by “**The Scientific and Technological Research Council of Turkey (TÜBİTAK) through 1001 Scientific and Technological Research Projects Funding Program**” in the field of Superconductor Terahertz (THz) Science and Applications to realize a compact THz chip system, including a variety of Josephson plasma wave (JPW) devices such as emitters, high-frequency detectors, waveguides and high-band width receivers. The research program aims at growing epitaxial thick $\text{Bi}_2\text{Sr}_2\text{CaCu}_2\text{O}_{8+\delta}$ (Bi-2212) high- T_c superconducting films by liquid phase epitaxy (LPE) method, optimizing LPE system through structural/stoichiometric characterizations and imaging their surface textures and internal layered structures, and developing THz devices on these films by carrying out a series of electrical measurements as well as testing their THz-radiation performances.

Your responsibilities will include, but are not limited to, the following:

- Establishing a perfect LPE system to grow high quality epitaxial films
- Optimizing LPE system through variation of the growth conditions for high quality Bi-2212 films
- Demonstrating the high quality of our LPE-grown films through structural/stoichiometric characterizations and imaging their surface textures and internal layered structures.
- Structural, electrical and magnetic characterizations of the epitaxial Bi-2212 films
- Designing and manufacturing JPW devices on the Bi-2212 films
- Designing measurement setups (hardware and software) for investigating the transport characteristics of the junctions
- Test the performance of the THz devices on a THz chip

Minimum Qualifications:

- All candidates should have extensive experimental experiences in thin film deposition techniques, circuit design, clean-room technologies, nano-scale and upscale device fabrications, Nanoelectronics, cryogenics, electrical and magnetic measurement techniques, and instrument programming and also a theoretical backgrounds in condensed matter physics particularly superconductivity and Josephson dynamics
- Self-motivated and open for learning
- Ability to work independently or in groups
- Experience in creative problem solving and innovative solutions
- Strong oral written communication skills are prerequisite
- Publish results in a refereed journals and make oral presentations at meeting conferences
- The candidates expected to collaborate with scientist at SUNUM, Sabancı University (SU) and Izmir Institute of technology

Education Requirements:

- Bright motivated applicants who have BSc and MSc degree in Physics or related disciplines (Materials Science and Electronic Engineering)

Qualified candidates from all nationalities are invited to apply with a detail curriculum vitae and a cover letter to ysimsek@sabanciuniv.edu with e-mail subject “fellowship positions in superconductor THz Science

If you are a Ph.D. or Master student just recently enrolled in a related graduate program in Turkey, you may also work in the research project. Please feel free to directly send an email to “ysimsek@sabanciuniv.edu” for more detailed information concerning the open positions.

Application Deadline May 22, 2020 for graduate programs in Sabancı University

- Benefits

The research project will be funded for 30 months

-Master Scholarship: 3000 TL per month

-Ph.D. Scholarship: 3500 TL per month

- A tuition waiver and free accommodation at student dormitories will be provided by Sabancı University

SUNUM:

SUNUM is a Nanotechnology Research and Application Centre hosted by Sabancı University, Istanbul, Turkey. It is one of four Centers in the country that have recently been granted a special endorsement by the Turkish Ministry of Development as a National Research Centre of Excellence.

Its research focus is the intersection of four vertical thematic areas; namely, Life Sciences, Energy, Food & Agriculture, Water & Environment with the horizontal theme of Nanomaterials and Nanosystems.

SUNUM's mission is to excel as a Centre of Excellence for multidisciplinary and cross-disciplinary Nanotechnology research and development studies, offering global nano-technological solutions to societal challenges, creating socio-economic added-value through commercialization of research results by exploiting synergies and long-term strategic partnerships with stakeholders while contributing to the training of high caliber researchers.

Further details about the Center and its research activities can be found at

<https://www.sunum.sabanciuniv.edu>