



Aalto University  
School of Electrical  
Engineering

## Summer jobs, diploma works, doctoral student positions

MIKES-Aalto Mittaustekniikka (<http://metrology.tkk.fi>) is searching for summer students, diploma workers, and doctoral students. We have interesting starting and ongoing industrial and academic projects, where the students will take part. For part of the positions, the employment contract will be made with the associated company.

### **EMBERION**

Emberion is a company that is developing new type of graphene-based infrared detectors for night vision applications. The work includes developing measurement setups for characterization of single element detectors and camera arrays. Measured quantities include spectral responsivity, linearity of the responsivity, uniformity of responsivity, and noise equivalent power. This work provides opportunity to become familiar with a new camera technology which may replace presently available best instruments.



### **SPECTRAL ENGINES**

Spectral Engines Oy is an innovative high-tech company producing material sensors for narcotics. Motivated students are needed to study and characterize the near-infrared spectral sensors utilized. The applicant should be familiar with optics, physics, electronics, optical measurements setups and data handling. Students are also needed to study how to use the material sensor for narcotics and what kind of measurement variations can be seen in the field. The applicant should be familiar with optics, field measurements and data handling. (see [www.spectralengines.com](http://www.spectralengines.com) and [www.tactiscan.com](http://www.tactiscan.com))



The EMPIR initiative is co-funded by the European Union's Horizon 2020 research and innovation programme and the EMPIR Participating States



The Siquist project is a part of the European Metrology Programme for Innovation and Research (EMPIR). The aim of the project is to develop new absolute single-photon sources that could be used as quantum standards in various applications such as calibration of single-photon detectors, quantum random-number generation, quantum key distribution, sub-shot noise metrology and photon-based quantum computation. In the project, Aalto University will expand the usable power range of existing silicon photodiode based primary standards of optical power down to few photon regime. In practice, this means development and assembly of liquid nitrogen cooled cryostat systems, computer modelling, and test measurements.



UNIDET project (2018-21) funded by the Academy of Finland focuses on the development of a universal electromagnetic radiation detector based on the photoacoustic effect. It can be used to measure radiation power with high precision over a large dynamic range, with unprecedented operating range that extends from visible to the far-infrared and THz regions of the electromagnetic spectrum. UNIDET detector makes possible new scientific experiments and improves measurement capabilities in health, safety, and security applications, such as in the detection and analysis of explosives and toxic gas compounds.

We appreciate good study record, average preferably over 3.5. Good language skills in Finnish and/or English are essential for research work. We also appreciate practical skills, e.g. hobbies. Your field could be electronics, physics, optics or semiconductor physics.

**The deadline for applications is 28.2.2018.** The applicants are kindly asked to submit applications as soon as possible, because some positions may be filled already before the deadline. You may also approach us outside this official application period to see, which kind of projects we have available.

**Further information and applications (with CV and record of studies):**  
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