

# Research, Informatics and Graduate Studies

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## PhD/Master(MSc) in Time Response to Materials Stimulus -group of Prof. Klaus Liss (GS-2018003)

We are seeking candidates for a Masters/PhD position available in the area of Time Response to Materials Stimulus, employing synchrotron radiation, neutron scattering and potentially free-electron lasers. The Materials Science and Engineering Program, within the group of [Prof. Klaus-Dieter Liss](#), is looking for enthusiastic, motivated and competent scientists to conduct experimental research projects in the advance of understanding the physics on time-resolved structural response of materials to external stimulation, investigated by modern diffraction or spectroscopic techniques of synchrotron and neutron radiation, and complementary studies. You will work in a global large-infrastructure environment and obtain your degree at the Technion (Israel).

### Project Details

Quantum beam sources, comprising synchrotron and neutron radiation have tremendously evolved in their capabilities to study materials in a wide sense and will be applied to the understanding of time-resolved response when a material is excited by external stimulus, such as high-frequency oscillations, switching electromagnetic fields, thermal shock or other pump-probe technique. Scientific leading output on the materials is envisaged encompassing emerging and novel time-resolved techniques. Complementarity of different quantum beams and methods shall be exploited in order to achieve comprehensive scientific results. From a literature review and technical feasibility in-house and at large-user facilities (synchrotrons, neutron sources), the candidate selects adequate materials research problems and experimental setups. Complementary time averaged quantum beam scattering studies enhance the capabilities necessary for the materials characterization and in-depth evaluation of diffraction data. Time responses can lie in the sub-millisecond to sub-nanosecond domain. There exists a wide span of materials problems, such as high-cycle fatigue in ultrasonic fields, multi-ferroic relaxation, ultrafast temperature changes, electro-magnetic switching, laser pulse impact etc. Materials can be both structural and functional materials.

### Keywords

ultra-short time resolved; relaxation; response; ultrasonics; phonons; structural materials; functional materials; extreme conditions; advanced diffraction techniques; in-situ studies; real-time studies; advanced data analysis; computing and automation; scattering theories; diffraction theories; neutron scattering; synchrotron radiation; free-electron laser.

### Selection Criteria

- Fulfil Technion conditions for graduate studies (essential)
- Strong background in condensed matter physics (preferable)
- Strong interest in materials science theories (essential)
- Strong computing skills, including programming, scripting (essential) linux (preferable)
- Strong experimental and electronics skills (essential)
- High degree of innovation and drive to the project (essential)

### Program

Materials Science and Engineering

### Research Area

Time Response to Materials Stimulus

### Contacts

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### Application Deadline

Open till filled

### Location

Guangdong Technion - Israel Institute of Technology (GTIIT), China & Technion-Israel Institute of Technology, Haifa

### Date Posted

1 Feb. 2018

**Relevant PhD degree from Prof. Klaus-Dieter Liss**

### [Fees & Finance](#)

how to apply

- Strong interest to work temporarily at large-scale research facilities in China, Europe, United States, Japan or Australia, and in collaborating labs (essential)
- Strong interest in exact work and artistic presentation (essential)
- Good command of English (essential)
- Ability to work both independently and in a team environment (essential)
- Ability to author scientific reports and co-author scientific publications (essential)
- Willingness to participate in other research projects (essential)
- The candidate must fulfill the requirements for admission to the Technion Graduate School and needs to comply with its regulations leading to the PhD/MSc degree: <https://graduate.technion.ac.il/en/prospective-students/>