

## SEL Frontiers in Technology – a unique Internship opportunity



A challenge and a unique experience – do your M.Sc. thesis at Semiconductor Energy Laboratory Co., Ltd., sponsored by Dr. Shunpei Yamazaki – the top patent holder in the world!

[Semiconductor Energy Laboratory Co., Ltd.](#) (SEL) offers Swedish students master thesis projects at the company's headquarter in Atsugi (60 km southwest of Tokyo), for contributing to the promotion of friendship between Sweden and Japan.

SEL is a very unique company engaged in innovative R&D, prototyping, and patenting novel technologies. Revenues from licensing and collaborative research are invested in further R&D, which creates a sustaining intellectual property creation cycle. Over the years, SEL has developed some of the world's top-class semiconductor materials and device technologies, including low-temperature continuous grain silicon (CGS<sup>®</sup>), c-axis aligned crystalline indium gallium zinc oxide (CAAC-IGZO<sup>®</sup>), and crystal indium oxide (crystal IO<sup>®</sup>). SEL holds the majority of the patents in the field of oxide semiconductors as well as fundamental patents on organic light-emitting diodes (OLED) and rechargeable batteries. The company was founded in 1980 by its current chairman, Dr. Shunpei Yamazaki, and has approximately 700 employees, mainly young researchers.

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**The M.Sc. thesis projects (“exjobb”) currently being offered are:**

- **Development of an Accurate-Response Expert System using Generative AI**
- **Low-Temperature Charge/Discharge Mechanism in Li Ion Battery Anodes**
- **Analog In-Memory Computing Circuit Technology Using Oxide Semiconductors**
- **Development of High-Efficiency and High-Reliability Organic Light-Emitting Diode Materials and Devices**

**Duration:** 6 months

**Financial support:**

SEL will cover international airfare and offers a salary which covers all normal living costs. The student will stay at the dormitory for SEL staffs, which is within walking distance from the office. There are places where students can enjoy sports activities such as tennis, football, baseball, and hiking on weekends around SEL. SEL will assist in the visa application process for Japan.

**Background of the student(s):**

The required student qualifications depend on the project but could be, for example, solid state physics, semiconductor physics, crystallography, materials engineering, organic chemistry, inorganic chemistry, electrochemistry, physical chemistry, electrical and electronic engineering, circuit theory, computer science, mathematics. Knowledge of Japanese is an advantage but not required.

**Application periods 2026:**

- (1) March 15 – May 31: Primarily for projects during autumn, 2026
- (2) June 1 – October 15: Primarily for projects during spring, 2027

**Notes**

- You need to find a supervisor/examiner before applying.
- Application period until the quota is filled, i.e., apply now!
- We would like to as far as possible offer projects according to the schedule and requests of students.

**Contact:**

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Dr. Shunpei Yamazaki holds over 20,000 patents as of March 2025, and he renewed his own Guinness World Record on July 9, 2025. While a Ph.D. student at Doshisha University, he invented the basic device for non-volatile (“flash”) memory. He was awarded the Medal with Purple Ribbon by the Japanese government for the innovation of metal-oxide-semiconductor large-scale integration element technology in 1997 and subsequently received numerous international and domestic awards. He is a Life Fellow of the Institute of Electrical and Electronics Engineers (IEEE), a foreign member of the Royal Swedish Academy of Engineering Sciences (IVA), Academician of the World Academy of Ceramics (WAC), and Fellow of the Electrochemical Society (ECS). In 2025, he established a foundation, Dr. Shunpei Yamazaki Stiftelse, in Sweden. He has published or co-published 186 peer-reviewed journal papers and has given over 600 conference presentations.