# Materials Science for Sustainable Development

## Materials Science workshop 21-23 May 2019, Linköping, Sweden

### Workshop aims and goals

Funding agencies and Ministries from both Sweden and Japan have several times stressed the importance of bilateral collaboration to achieve important goals. Both countries are also strongly committed to the United Nations Sustainable Development goals.

Japanese and Swedish universities, institutes, research infrastructures and scientists have had very good and fruitful collaborations for a long time and during recent times many new initiatives have started, whereof MIRAI is one. At the MIRAI Seminar 2018 in Tokyo, several national agencies and foundations again expressed their commitment to strengthen the Japanese – Swedish collaboration. It is therefore most likely that within the near future a new call for collaborative projects between Sweden and Japan will come from the funding agencies.

**This workshop will therefore be an inventory and training to prepare an application for such a call.**

**We start with a seminar by Professor Aleksandar Matic on UN Goal 6, "*Ensure availability and sustainable management of water and sanitation for all*", and UN Goal 7", "*Ensure access to affordable, reliable, sustainable and modern energy for all*".** Two SDGs, which are highly relevant for advanced Material Science/Technology and highly conform with our sub topics "*Materials for energy devices*" and "*Bio- and Bioinspired materials*". To achieve state-of-the-art results, it might also be needed to have some knowledge about our other sub topics *"Low dimensional materials and surfaces*" and "*Advanced characterization*" of materials.

We then proceed with all participants pitching their research focusing on how they can contribute to solving the UN Goals outlined above. Examples of relevant research include, but are not limited to, material for solar cells, batteries, fuel cells, smart windows, hydrogen storage, energy saving electronics, water filters, water contamination sensors and heat isolation materials. One example of an innovative way to use advanced characterization to obtain better filters is this (click on link). Please note, this is only one example, many others can be found.

After these introductory sessions, the participants will be asked to form Swedish-Japanese teams to prepare an outline of a collaboration application. To write a joint application requires special training and is different from regular applications, since the boundary conditions are different. It is particularly important to stress the additive values of an international collaboration in the projects. Some examples of these values are scientific uniqueness, technical expertise, unique instrumentation but many others exist. The workshop organizers have many years of experience of international collaborations and applications, and will focus on assisting you in developing your ideas.

Finally, the teams will be asked to shortly present an outline of their proposed project.

# Programme

| **Day 1 Tuesday 21st**<br>Campus Valla, Linköping | | | Location |
|---|---|---|---|
| 08.30 | Transfer from city to campus Valla, Linköping | | Bus Pick up point at Hotel Clarion<br>*See separate map* |
| 09.00 – 09-10 | Welcome | Vice president Linköping University<br>Prof Peter Värbrand | ACAS |
| 9.10 – 9.20 | Opening remarks | Prof Ulf Karlsson | ACAS |
| 9.20 – 10.00 | Keynote speech - SDG | Prof Aleksandar Matic | ACAS |
| 10.00-10-30 | Fika & Group photo | | Outside ACAS |
| 10.30 - 11.45 | Pitch presentations – Focus: "How, and in what way, does your research contribute to solving SDG goal #6 or #7?" | Everyone in one group<br>Pitch time: 5min/person<br>Ca 8 persons/session<br>Ca 25 min discussion<br>Moderator:<br>Asst Prof Ove Andersson | ACAS |
| 11.50 -12.50 | Lunch | | University Club |
| 13.00-14.15 | Pitch presentations – Focus: "How, and in what way, does your research contribute to solving SDG goal #6 or #7?" | Everyone in one group<br>5min/person<br>Ca 8 persons/session<br>Ca 25 min discussion<br>Moderator:<br>Prof Nobuo Kimizuka | ACAS |
| 14.15 – 14.45 | Fika | | Outside ACAS |
| 14.45 -16.15 | Pitch presentations – Focus: "How, and in what way, does your research contribute to solving SDG goal #6 or #7?" | Everyone in one group<br>5min/person<br>Ca 8 persons/session<br>Ca 25 min discussion<br>Moderator:<br>Prof Aleksandar Matic | ACAS |
| 16.15-17.15 | Campus tour<br><br>Study visit Ångström building and Arwen microscope | Campus tour: Ca 30 min<br><br>Guided tour in Arwen (30min)<br>Guide: Prof Jens Birch | Campus<br><br>Ångström building |
| 17.30 - 20 | Poster session & mingle with buffet food | Upon arrival to the premises, everyone puts up their own poster. Pins provided. | Zenit |
| *18.30-19.30* | *SSC meeting* | | Zenit |
| ~ca 20 | Transfer to city | | Bus drop off point at Hotel Clarion |

| **Day 2 Wednesday 22nd**<br>Campus Valla, Linköping & Excursion | | | Location |
|---|---|---|---|
| 08.10 | Transfer from city to campus Valla, Linköping | | Bus Pick up point at Hotel Clarion |
| 08.30 – 09.10<br><br>09.10 -09.50 | Keynote speech - Japan<br><br>Keynote speech -Sweden | Prof Katayama<br>*"Chemical Systems for Immuno-Modulation"*<br>Prof Inganäs<br>*"Decarbonising energy systems with biopolymers and carbon materials"* | ACAS |
| 09.50 – 10.20 | Fika | | Outside ACAS |
| 10.20 – 11.40 | SDG-focused session | Work in Swedish-Japanese teams to prepare an outline of a collaboration application | ACAS<br>Group rooms:<br>AG21, AG22, AG23 |
| 11.50 – 12.30 | Lab tours | Guided tours according to sub topic | Physics Building |
| 12.40-13.30 | Lunch | | University Club |
| 13.30 - 17.00 | Excursion | *Wear relaxed clothing & trainers. 20 min climb (250 m)* | Omberg (Eng)<br>Omberg (Swe) |
| 18.00-20.00 | Dinner | | Kloster Hotel, Vadstena |
| Ca 20.00-21.00 | Transfer to city | | Bus drop off point at Hotel Clarion |

| **Day 3 Thursday 23rd**<br>Campus Norrköping, Norrköping | | | Location |
|---|---|---|---|
| 08.30 | Transfer from city to campus Norrköping | | Bus Pick up point at Hotel Clarion |
| 9.15-11.45 | SDG-focused session<br>(Fika during the session) | Work in Swedish-Japanese teams to prepare an outline of a collaboration application | Group rooms<br>Kåkenhus, body 4<br>level 3 x 2 rooms<br>level 4 x 3 rooms |
| 12.00-13.00 | Lunch | | Work museum |
| 13.10-14.30 | SDG-focused session | Each team presents the outline of the collaboration project. Discussion with audience | K23 |
| 14.30-14.40 | Finishing remarks | Prof Kimizuka | K23 |
| 14.50-15.20 | Fika | | Visualisation center |
| 15.30-17.00 | Visualisation Center<br><br>Printed Electronics lab | 15.30 film i the 360-dome "*All we are*"<br><br>16.20/25 Guided tour (2 groups) in Printed Electronics lab | Visualisation center<br><br>Printed Electronics |
| 17.10 | Transfer to Linköping | Arrival Linköping ca 18.00 | |
| Ca 18 | Farewell dinner | | Tbd |

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