
# 3rd International Workshop on Advanced Ceramics and Technologies for Dentistry (ACT4D 2019)

## 17-19 March 2019

## Stockholm Sweden

# Conference guide

JECS Trust

Stockholm University

Ceravik

# Workshop ACT4D 2019 Program Overview

**Programme: ACT4D2019**

| | | | |
|---|---|---|---|
| **March 17** | | | |
| **14:00-17:00** | **Registration** | | **Arrhenius Laboratory, Stockholm University, Svante Arrhenius väg 16 C** |
| **18:00-22:00** | **Reception** | | **Faculty Club, Stockholm University** |
| **March 18** | | | |
| **8:30-9:00** | **Registration** | | **Magnélisalen, Svante Arrhenius väg 16 C** |
| **9:00-9:10** | Opening | James Shen | Innovation and cross-disciplinary collaboration |
| 9:10-10:25 | Presentations | | |
| **10:25-11:00** | **Coffee break** | | |
| 11:00-12:15 | Presentations | | |
| **12:15-14:00** | **Lunch** | | |
| 14:00-15:40 | Presentations | | |
| **15:40-16:30** | **Coffee break** | | |
| 16:40-17:55 | Presentations | | |
| **19:30-22:00** | **Workshop dinner** | | **Grill, Drottninggatan 89, 113 60, Stockholm** |
| **March 19** | | | |
| 8:30-10:05 | Presentations | | |
| **10:05-10:35** | **Coffee break** | | |
| 10:35-12:05 | Presentations | | |
| **12:05-14:00** | **Lunch** | | |
| 14:00-15:30 | Presentations | | |
| **15:30-16:10** | **Coffee break** | | |
| 16:10-17:10 | Round table discussion | | |

**Time slot: 20+10 for Invited, 20+5 for keynote, 15+5 for oral**

| | |
|---|---|
| **Posters** | during the coffee breaks |

Welcome to the 3rd International Workshop on Advanced Ceramics and Technologies for Dentistry (ACT4D 2019)

The workshop was initiated in 2011, in Stockholm, Sweden, followed by a 2nd one in 2017, in Budapest, Hungary. Both were arranged in association with the Conference & Exhibition of the European Ceramic Society (ECerS XII and XV). The aim was to provide a forum for multidisciplinary brainstorm and discussions between ceramists, engineers and clinicians devoted to dentistry with the focus on challenges encountered by the current and the emerging technologies, as well as future concepts going beyond the state of the art.

Seeing a clear tendency for dentistry towards digitalization and of the expanding applications of advanced ceramics, not only as prostheses but also as implants, we intend to establish this as an independent workshop series from 3rd meeting onwards.

The scope of the 3rd meeting will be broadened involving topics of **advanced ceramics** and relevant **advanced technologies**. In this way, we aim at integrating more complementary knowledge and skills together with cross-disciplinary action on the synergy of fundamental research and needs-driven exploration of advanced ceramics and technologies timely demanded for dentistry. The workshop traditionally seek the works relating to *i*) the developing and customized manufacturing of novel advanced ceramics with improved properties, *ii*) the fundamental understanding of the interactions between ceramics (on the micro-to-nanoscale level) and hard-to-soft tissues (on protein and cell level), *iii*) the reliability 2 of ceramic parts in relation to their hierarchical microstructures and of the feasibility of fitting the ceramic processes into a full digital clinic approach. Besides these the 3rd workshop will also cover the newly quoted works on *iv*) advanced technologies that will enable the establishment of an ecosystem based on model-free digital workflows.

Zhijian James Shen

# Committee

## Chair:

Zhijian James Shen, Stockholm University, Sweden.

## Invited speakers:

Mutlu Özcan, University of Zurich, Switzerland.

Peijun Lyu, Peking University, China

Ralf-J. Kohal, Medical Center - University of Freiburg, Germany.

Xuliang Deng, Peking University, China

Per Vult von Steyern, Malmö University, Sweden.

Takashi Goto, Tohoku University, Japan.

## Keynote speakers:

Kwok-Hung (Albert) Chung, University of Washington, USA.

Keren Shemtov-Yona, Israel Institute of Technology

Zhe Wu, Affiliated Stomatological Hospital of Guangzhou Medical University, China.

Noran de Basso, Svea Tandklinik, Sweden

Per Tidehag, Linköping Unversity, Sweden

Peter Jevnikar, University of Ljubljana, Slovenia

Zhijian James Shen, Stockholm University, Sweden

Chonglin Chen, UTSA, USA

Håkan Engqvist, Uppsala University, Sweden

Andraz Kocjan, Jozef Stefan Institute, Slovenia

Zhiyang Chen, Hangzhou, China

Jian Sun, Shanghai Jiaotong University, China

Fei Zhang, University Hospitals Leuven, Belgium

## Scientific committee:

Ann Wennerberg, Göteborg University, Sweden

Yimin Zhao, The Fourth Military Medical University, China

Mutlu Özcan, University of Zurich, Switzerland

Matts Andersson, Chalmers University of Technology, Sweden

Per Vult von Steyern, Malmö University, Sweden

Ralf-J. Kohal, Medical Center - Univerisity of Freiburg, Germany

Jerome Chevalier, Institut National Des Sciences Appliquees (INSA) of Lyon, France

Xuliang Deng, Peking University, China

Kwok-Hung (Albert) Chung, University of Washington, USA

Takashi Goto, Tohoku University, Japan

Peijun Lyu, Peking University, China

Ke Zhao, Sun Yat-Sen University, China

Mike Reece, Queen Mary University of London, UK

Zhijian James Shen, Stockholm University, Sweden

## Local organizing committee

Zhijian James Shen, Stockholm University

Per Vult von Steyern, Malmö University

Per Tidehag, Västerbotten county council

Erik Adolfsson, Swerea IVF

Yuan Zhong, Stockholm University

Mirva Eriksson, Stockholm University /mirva.eriksson@mmk.su.se /+46707494800

# Venue & Accommodation

### *Registration and workshop venue*

Magnéli Hall, Svante Arrhenius Laboratory, Stockholm University.
Address: Svante Arrhenius Väg. 16C, 106 91 Stockholm, Sweden

## How to get there:

### *Underground trains*

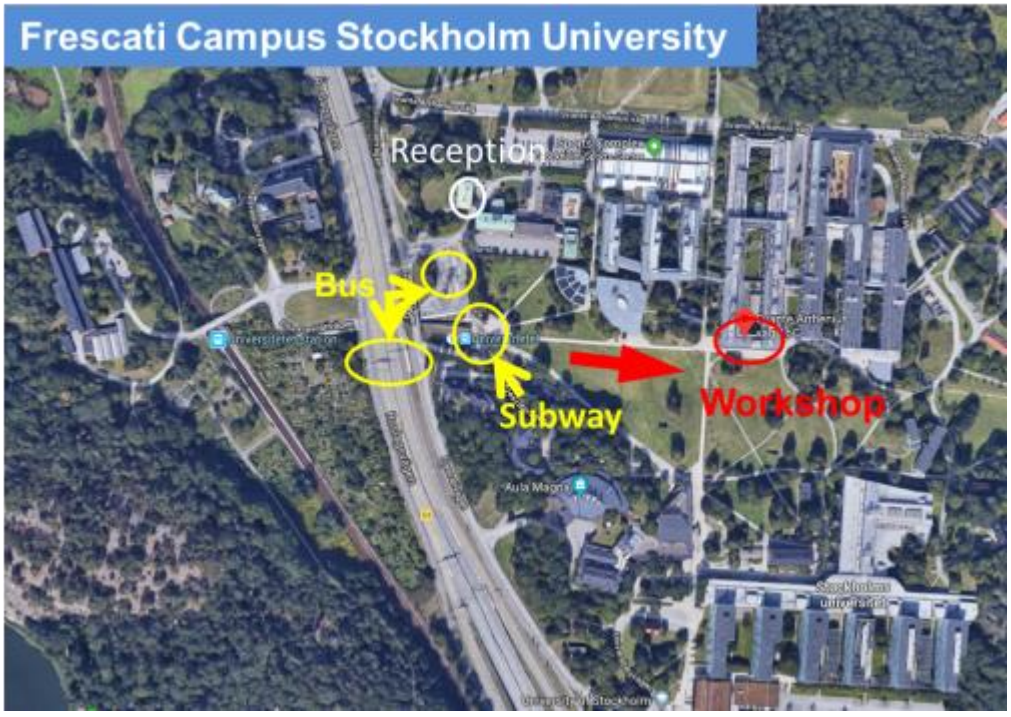
From the central station in Stockholm (T-centralen), take the red line No. 14 northbound to Mörby Centrum and get off at the station 'Universitetet'. The journey takes about 10 minutes.

### By *bus*

Take bus No. 50 and get off at the station 'Universitet', or buses No. 540 ,670, 676 and get off at the station 'Universitet Norra'. Please observe that tickets for buses must be bought in advance.

### Taxi

Please make sure you know the price before you start your trip with taxi. Take official taxi in Stockholm such as Taxi Stockholm 150000, Taxi kurir, Taxi 020.




Map to Svante Arrhenius Laboratory

### *Accommodation*

There are many youth hostels and hotels in Stockholm, which can be booked via www.booking.com.

# Workshop information

## *Registration*

Registration of the delegates will start on Sunday, 17th March at 14 to 17 at Stockholm University Svante Arrheniusvägen 16C. The desk will be also open on Monday 18th March 8.30-9.00.

## *Information for speakers*

Time allocated for the invited lectures is 20 min + 10 min for discussion, for keynote lectures 20 min + 5 min, while the time slot for a presentation is 20 min including discussion.

There will be available a computer for uploading the presentation, please do that in the break before your presentation.

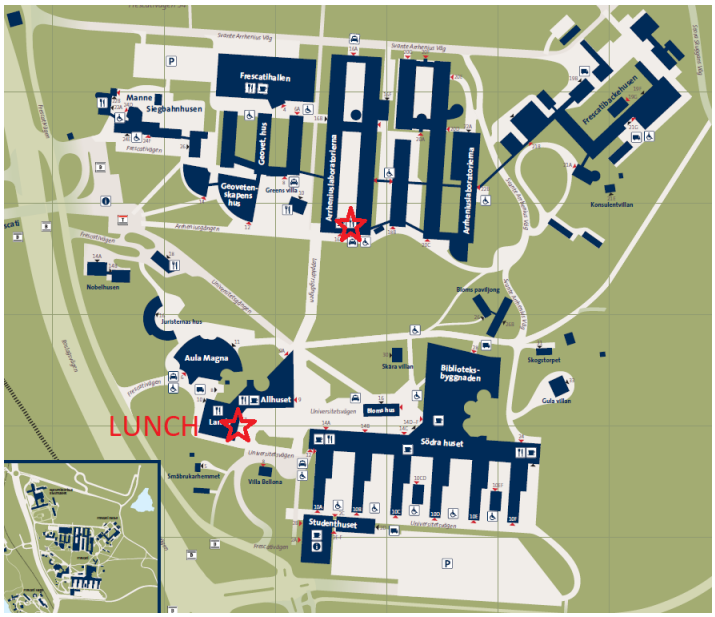
## *Information for the poster session*

Posters will be on from Monday to Tuesday, the presentation and discussion are scheduled on the coffee breaks on both workshop days. Please attend your poster board for discussions

Posters will be mounted and removed from the supporting panels by the authors. The maximum size should be A0 (841 x 1189 mm).

## *Lunch*

Lunch is served in lunch restaurant in the university campus. There will be no lunch tickets but the table is reserved to the delegates in the lunch restaurant. It is marked in in the map below. Please follow the group.



### *Opening reception*

Welcome reception will be Sunday 17th March at 18:00-23:00 in a historical faculty club of Stockholm University. The reception hall was once the house of Nobel laureate in Physics 1924 Manne Siegbahn. See the map1 for the location and the address is:

Stockholms universitets fakultetsklubb
Manne Siegbahnvillan
Frescativägen 22
106 91 Stockholm

### *Workshop dinner*

Workshop dinner will be held on Monday 18th March at 19:30 in a famous restaurant Grill. The address and telephone number are:

Drottninggatan 89, 113 60 Stockholm

+46-(0)8-314530

*Please call Mirva Eriksson if any problems: +46 707494800*

**The emergency number in Sweden is 112**

# Technical program

Last minute changes are possible; the updated version is received by the registration.

| **March 17** | | | |
|---|---|---|---|
| **14:00-17:00** | **Registration** | | **Arrhenius Laboratory, Stockholm University, Svante Arrhenius väg 16 C** |
| **18:00-22:00** | **Reception** | | **Faculty Club, Stockholm University** |
| | | | |
| **March 18** | **Type of presentation** | **Name** | **Title** |
| **8:30-9:00** | **Registration** | | **Magnélisalen, Svante Arrhenius väg 16 C** |
| **Section 1** | **Chairman:** | **Per Vult von Steyern** | |
| **9:00-9:10** | Opening | Zhijian James Shen | Innovation and cross-disciplinary collaboration |
| 9:10-9:40 | Invited | Ralf Kohal | Oral implants made from zirconia ceramics. How do they perform? |
| 9:40-10:05 | Keynote | Per Tidehag | A prospective evaluation of self-glazed zirconia for posterior fixed dental prostheses: three-year clinical results |
| 10:05-10:25 | Oral | Lu Song | Matching up the optical appearances of natural teeth and zirconia prostheses: interpretation and digitalization |
| | | | |
| **10:25-11:00** | **Coffee break** | | |
| **Section 2** | **Chairman:** | **Peter Jevnikar** | |
| 11:00-11:30 | Invited | Mutlu Özcan | Adhesion to dental ceramics: Technical and clinical parameters |
| 11:30-11:55 | Keynote | Kwok-Hung(Albert) Chung | Less is more: towards self-glazed zirconia |
| 11:55-12:15 | Oral | Hongbo Zhou | Preparation of mullite toughened zirconia ceramics and the microstructure and mechanical properties |
| | | | |
| **12:15-14:00** | **Lunch** | | |
| **Section 3** | **Chairman:** | **Ralf Kohal** | |
| 14:00-14:30 | Invited | Fusong Yuan/Peijun Lyu | Why do we develop intelligent robots for oral surgeries? |
| 14:30-14:55 | Keynote | Peter Jevnikar | Towards reliable implementation of zirconia dental restorations |
| 14:55-15:20 | Keynote | Zhiyang Chen | Novel collaborative cloud platform for all-digitalized dental treatments |
| 15:20-15:40 | Oral | Jaroslav Kaštyl | Parameters optimization for CAD-CAM machining of zirconia |
| | | | |
| **15:40-16:30** | **Coffee break** | | |

| | | | |
|---|---|---|---|
| **Section 4** | **Chairman:** | **Mutlu Özcan** | |
| 16:40-17:10 | Invited | Takashi Goto | Chemical vapor deposition of bio-ceramic coating |
| 17:10-17:35 | Keynote | Jian Sun | Dimension accuracy and clinical adaptation of ceramic crowns fabricated by stereolithography technique |
| 17:35-17:55 | Oral | Hezhen Li | Minimising defects in zirconia dental prostheses by stereolithography-based additive manufacturing: focusing on the post printing processes |
| | | | |
| **19:30-22:00** | **Workshop dinner** | | **Grill, Drottninggatan 89, 113 60, Stockholm** |
| | | | |
| **March 19** | | | |
| **Section 5** | **Chairman:** | **Takashi Goto** | |
| 8:30-8:55 | Keynote | Noran De Basso | Ten reasons for pursuing zirconia implants |
| 8:55-9:20 | Keynote | Keren Shemtov-Yona | Evaluating the fatigue performance of zirconia dental implants |
| 9:20-9:45 | Keynote | Zhe Wu | Self-glazed zirconia for aesthetic restorations |
| 9:45-10:05 | Oral | Yaoyang Xiong | Optical and mechanical properties of novel zirconia |
| | | | |
| **10:05-10:35** | **Coffee break** | | |
| **Section 6** | **Chairman:** | **Håkan Engqvist** | |
| 10:35-11:05 | Invited | Matts Andersson | From dentistry to orthopedics: a consistent struggle for better precision and materials |
| 11:05-11:35 | Invited | Per Vult von Steyern | A paradigm shift in dental ceramics |
| 11:35-12:05 | Invited | Zhijian James Shen | Dental ecosystem in digital era |
| | | | |
| **12:05-14:00** | **Lunch** | | |
| **Section 7** | **Chairman:** | **Kwok-Hung(Albert) Chung** | |
| 14:00-14:25 | Keynote | Wei Xia/ Håkan Engvist | Bioactive Silicon Nitride Dental Implant |
| 14:25-14:50 | Keynote | Andraž Kocjan | Micro-to-nano roughening of 3Y-TZP surface for improved osseointegration and antibacterial response |
| 14:50-15:10 | Oral | Nina Grguras | Monolithic Zirconia Ceramic Dental Prostheses – Clinical Experience |
| 15:10-15:30 | Oral | Abram Emese | Spectrophotometric examination of multilayered zirconia |
| | | | |
| **15:30-16:10** | **Coffee break** | | |

| | | | |
|---|---|---|---|
| **Section 8** | | | **Round table discussion** |
| 16:10-17:10 | | | Chairmen: Matts Andersson, Andraž Kocjan, Zhijian James Shen |
| **Time slot: 20+10 for Invited, 20+5 for keynote, 15+5 for oral** | | | |
| **Posters** | | | |
| Dawei Guo | | Morphological changes of pharyngeal airway after incisor retraction in bimaxillary protrusion growing patients with maximum anchorage | |
| Dawei Guo | | Expression and Function of Hypoxia Inducible Factor-1α and Vascular Endothelial Growth Factor in Rat Periodontal ligament under Orthodontic Stretch | |
| Liu Rongrong | | Fabrication of the implant-supported cross-arch fixed bridge with titanium framework and all-ceramic crowns | |
| Mirva Eriksson | | In-vivo aged phosphate cements tells the stories | |
| Fusong Yuan | | Method to accuracy control when three-dimensionally ablating dental sintered zirconia with numerically controlled femtosecond laser | |
| Bingqing Li | | A porous microsphere based on PLGA for dentin-pulp regeneration | |
| Shihua Xue | | Antagonist Enamel Wear of Self-glazed Zirconia Crowns In Vivo | |
| Yuan Zhong | | Ceramics solutions towards digital dentistry | |
| Yihong Liu | | Preliminary evaluates of biosilica porous microspheres for dentin regeneration in vivo | |
| Tine Malgaj | | The effect of firing protocols on the resin-bond strength to alumina-coated zirconia ceramics | |