

## **Welcome to the NKS-FUM 2021 meeting**

### **The event place:**

The event will take place at Thon Hotel Arena in Lillestrøm.

<https://www.thonhotels.no/hoteller/norge/lillestrom/thon-hotel-arena/>

We have reserved the meeting room called "Akershus" for the event.

The hotel is conveniently located nearby the Lillestrøm train station within walking distance; 12 minutes of travel by train from either Oslo S or from the Gardermoen Airport; approximately 20 minutes by car from Oslo city center. The Hotel has parking space outside and inside, with the cost: 20 NOK/hour or 150 NOK/day. You can use the ParkLink app with zonenumber 0429. In addition, you can use the parking space at Norges Varemesse, 2 minutes from the hotel.

### Instructions for covering your payment:

As the event is a low budget event, all expenses are directly related the Hotel.

### **Update:** The procedures for your payments are:

Those that participate on Monday only, with or without dinner, can pay on Monday after 12.

Those that participate on both Monday and Tuesday, with or without dinner or hotelroom, can pay on Tuesday at 13. Before and after lunch on Tuesday is ok.

The hotel will make individual arrangements for those that need to leave earlier than what these options allow for. Those that will stay for the night will pay at check-in, but the receipt will not be complete until Tuesday.

### Instructions for the speakers:

We have accommodated a large number of speakers for the meeting, and, therefore, the schedule is tight. We urge you to plan your talk according to the schedule and to allow for ca. 5 minutes of questions and exchange to the next speaker. Please, keep in mind that the audience has a broad level of competence and may probably lack the detailed knowledge in your particular field. Feel free to be clear about what you find particularly interesting, what would you like to be helped with to push your field further, and what can you contribute with to help other fields. There will be a common laptop where you can upload your presentation: you must do that during the break before your session the latest.

### Instructions for the posters:

The posters will be available during the breaks though the day and during the main poster session, which will take place before the dinner. The place on the wall in the meeting room will be reserved for posters and rubberadhesive will be provided. Please keep the width of the poster below 100 cm, and we recommend the 70x100 cm<sup>2</sup> format since it allows for easy and sustainable reuse and framing of the poster when you get back home.

## Program NKS-FUM 2021

### Monday 1st of November

|       |       |                        |                                                                                                                            |
|-------|-------|------------------------|----------------------------------------------------------------------------------------------------------------------------|
| 09:55 | 10:05 | Ola, Alexey, Martin    | Welcome                                                                                                                    |
| 10:05 | 10:10 | Matriks                | Some words from our sponsor...                                                                                             |
| 10:10 | 10:30 | Martin Valldor         | Two-anion chemistry and its possibilities.                                                                                 |
| 10:30 | 10:45 | Inger-Emma Nylund      | Structure determination of $K_2BiNb_5O_{15}$ and $Rb_2BiNb_5O_{15}$ by electron diffraction.                               |
| 10:45 | 11:00 | Frode Håskjold Fagerli | Controlling MXene terminations: utilizing their full potential                                                             |
| 11:00 | 11:15 | Frida Hemstad Danmo    | Oxygen absorption in nanocrystalline hexagonal $RMnO_3$ ( $R = Y, Ho, Dy$ ) and the effect of Ti donor doping              |
| 11:15 | 11:35 | <b>Break</b>           |                                                                                                                            |
| 11:35 | 11:55 | Julian Walker          | Learning from ceramics to engineering supramolecular ferroics                                                              |
| 11:55 | 12:10 | Athanasios Chatzitakis | A monolithic and noble metal-free PV-driven photoelectrochemical device for efficient water splitting                      |
| 12:10 | 12:30 | Alexey Kopusov         | Battery research at UiO                                                                                                    |
| 12:30 | 12:45 | Harald Norrud Pollen   | Synthesis of Ni-rich $LiNi_{0.88}Mn_{0.06}Co_{0.06}O_2$                                                                    |
| 12:45 | 13:00 | Frida Sveen Hempel     | Na-structure and dynamics for NZTO, a possible solid-state electrolyte                                                     |
| 13:00 | 14:00 | <b>Lunch</b>           |                                                                                                                            |
| 14:00 | 14:20 | Daniel Rettenwander    | The role of Co on the structural and electrochemical properties of $Li_7La_3Zr_{12}O_{12}$                                 |
| 14:20 | 14:35 | Nikolai Helth Gaukås   | Fabrication of LLZO Powders and Fibres for Application in PEO-LLZO Composite Solid Electrolytes.                           |
| 14:35 | 14:50 | Carmen Cavallo         | Towards fast-charging generation electrode: high-rate anodes for Li-ion batteries (LIBs) and Li-ion capacitors (LICs)      |
| 14:50 | 15:05 | Anders Brennhagen      | Operando XRD studies on $Bi_2MoO_6$ as anode material for Na-ion batteries.                                                |
| 15:05 | 15:20 | Vajeeston Ponniah      | Screening materials for battery application using machine learning                                                         |
| 15:20 | 15:40 | <b>Break</b>           |                                                                                                                            |
| 15:40 | 16:00 | Kaiying Wang           | Functional nanomaterials for energy energy conversion                                                                      |
| 16:00 | 16:15 | Ragnar Strandbakke     | Mixed proton and electron conducting ceramics.                                                                             |
| 16:15 | 16:30 | Per Martin Rørvik      | Development of electrodes and complete electrochemical cells based on surface protonics                                    |
| 16:30 | 16:45 | Irene Yuste Tirados    | Interpreting impedance spectra for identification of rate-limiting processes in full proton ceramic cells.                 |
| 16:45 | 17:00 | Xin Liu                | Microkinetic study on $NH_3$ cracking in a protonic electrochemical cell                                                   |
| 17:00 | 17:15 | Xiaolan Kang           | Supported bimetallic nanostructures through combined in situ exsolution and galvanic replacement for catalytic versatility |
| 17:30 | 19:00 |                        | <b>Poster session</b>                                                                                                      |
| 19:00 |       | <b>Dinner</b>          |                                                                                                                            |

## Tuesday 2nd of November

|       |       |                                     |                                                                                                                   |
|-------|-------|-------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| 08:15 | 08:45 | NKS-FUM generalforsamling           |                                                                                                                   |
| 08:45 | 09:05 | Ingrid Hallsteinsen                 | Interface engineering by Pulsed laser deposition of novel oxide heterostructures                                  |
| 09:05 | 09:20 | Henrik H. Sønsteby                  | Exotic properties in epitaxial nickelates by ALD                                                                  |
| 09:20 | 09:35 | Jan Schultheiß                      | Charged Ferroelectric Domain Walls for AC Signal Control                                                          |
| 09:35 | 09:50 | Markus Lid                          | Multistep low-level patterning with focused ion beam milling for enhanced precision and reduces surface damage    |
| 09:50 | 10:05 | Abdulla Shaikh Abdul Qader Bin Afif | Design and Validation of Adaptive ALD Reactor for In-Situ FTIR Spectroscopy Studies                               |
| 10:05 | 10:25 | <b>Break</b>                        |                                                                                                                   |
| 10:25 | 10:40 | Sachin's Chavan                     | Dawn of Zr-MOF                                                                                                    |
| 10:40 | 10:55 | Kim Robert Gustavsen                | Copper Hydroxide Nanoneedle Catalysts for Electrochemical CO <sub>2</sub> Reduction                               |
| 10:55 | 11:10 | Julie Hesdevik                      | LaNiO <sub>3</sub> as a Pt catchment material in the ammonia oxidation process                                    |
| 11:10 | 11:25 | Vilde Bråten                        | Equation of State for Nanosystems                                                                                 |
| 11:25 | 11:45 | <b>Break</b>                        |                                                                                                                   |
| 11:45 | 12:05 | Magnus H. Sørby                     | Local structuring in high-entropy alloy hydrides from total scattering measurements                               |
| 12:05 | 12:20 | Martin Jensen                       | Generic approach to controlled bimetallic nanoparticle synthesis                                                  |
| 12:20 | 12:35 | Caitlin Guzzo                       | Functional Secondary Phase Engineering in Lead-Free Piezoelectric Bioceramics                                     |
| 12:35 | 12:50 | Arpenik Kroyan                      | Thermodynamic and dynamic properties of a resin mixture with embedded SiO <sub>2</sub> from Molecular Simulations |
| 12:50 | 13:00 | Martin, Alexey, Ola                 | Final remarks                                                                                                     |
| 13:00 | 14:00 | <b>Lunch</b>                        |                                                                                                                   |

## Posters

| Author                            | Title                                                                                                                                                    |
|-----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Viviann Hole Pedersen             | Aqueous chemical solution synthesis of $\text{Sr}_x\text{Ba}_{1-x}\text{Nb}_2\text{O}_6$ thin films and in situ studies of crystallization and texturing |
| Jan Schultheiß                    | Nanotwin Density Mapping in Bulk Functional Materials                                                                                                    |
| Mohsen Sadeqi Moqadam             | Surface Characterization of Piezoelectric Bio-Ceramic                                                                                                    |
| Benjamin Williamson               | Earth abundant and stable, is LiSiNO the future of solid state batteries?                                                                                |
| Caren Zeiger                      | Synthesis and characteristics of tetragonal tungsten bronze KBiN (Potassium bismuth niobate)                                                             |
| Linn Rykkje                       | Synthesis and characterization of $\text{NdNiO}_3$ thin films from ALD                                                                                   |
| Mathilde Verne                    | In-situ XPS of PtRh NPs during $\text{NH}_3$ oxidation                                                                                                   |
| Florian Flatscher                 | Enabling High-Rate Plating in Solid-State Li Batteries by Interface Engineering and Pulse Plating                                                        |
| Veronica Anne-Line Kathrine Killi | Coating of powder by ALD                                                                                                                                 |
| Erlend North                      | Organic sensitization in $\text{LnF}_3$ -nanostructures for up-conversion                                                                                |
| Johnny Sannes                     | Characterization of a new oxide chloride $\text{Sr}_2\text{VO}_3\text{Cl}$                                                                               |
| Linda Siobhan Joseph              | Growing double perovskite thin films via pulsed laser deposition for the potential application in solar cell technology                                  |
| Nora Statle Løndal                | Synthesis and properties of $\text{Ba}_4\text{A}_2\text{Nb}_{10}\text{O}_{30}$ (A=Na, K, Rb)                                                             |
| Stine Roen                        | Application of AC and DC methods to provide insight to positron polarization for solid oxide and proton ceramic electrochemical cells                    |
| Stine Sletvold                    | De-icing coatings based on solar illumination.                                                                                                           |
| Walace Kierulf-Vieira             | Thermodynamic versus kinetic stability of nanostructured Pt-Rh nanoparticles at operational conditions                                                   |
| Asbjørn Slagtern Fjellvåg         | Platinum catchment on noble metal alloys                                                                                                                 |
| Kevin Gregor Both                 | Plasmonic Enhancement of STO by Galvanic Replacement of Exsolved Ni Nanoparticles with Au                                                                |
| Henrik Lind Petlund               | Modification of double perovskite BGLC587 with Fe, Ni and Mn for the oxygen evolution reaction (OER).                                                    |
| Xinwei Sun                        | Surface protonic conductivity in chemisorbed and physisorbed water layers in porous nanoscopic $\text{CeO}_2$                                            |
| Henry Chen                        | Sintering and conductivity study of proton conducting BSZCY151020 solid electrolyte.                                                                     |
| Emil Frøen                        | Synthesis and characterization of $\text{Zn}_3\text{N}_2$ quantum dots                                                                                   |
| Amir Masoud Dayaghi               | BSZCY151020: New proton-conducting electrolyte with TEC optimized for metal-supported proton ceramic electrochemical cell                                |

|                         |                                                                                    |
|-------------------------|------------------------------------------------------------------------------------|
| Madeeha Khalid Pedersen | Defects and transport in garnet-type electrolyte for solid-state Li-ion batteries  |
| Sjur Storhaug           | TBA                                                                                |
| Bruno Eggert            | Exploring solubility of $\text{Ni}_2\text{In}$ structure in MnNiSi-based compounds |

### Sorted list of participants with affiliation and e-mail

|                         |            |                              |
|-------------------------|------------|------------------------------|
| Abdulla Bin Afif        | NTNU       | abdulla.binafif@ntnu.no      |
| Alexey Kopusov          | UiO        | Alexey.Kopusov@kjemi.uio.no  |
| Amir Masoud Dayaghi     | UiO        | a.m.dayaghi@smn.uio.no       |
| Amund Ruud              | NIOM       | amund.ruud@niom.no           |
| Anders Brennhagen       | UiO        | anders.brennhagen@smn.uio.no |
| Arpenik Kroyan          | NTNU       | arpenik.kroyan@ntnu.no       |
| Asbjørn S. F.           | UiO        | a.s.fjellvag@smn.uio.no      |
| Benjamin Williamson     | NTNU       | benjamin.williamson@ntnu.no  |
| Bruno Eggert            | IFE/UiO    | bruno.eggert@IFE.no          |
| Caitlin Guzzo           | NTNU       | caitlin.guzzo@ntnu.no        |
| Caren Zeiger            | NTNU       | caren.zeiger@ntnu.no         |
| Carmen Cavallo          | UiO        | carmen.cavallo@smn.uio.no    |
| Daniel Rettenwander     | NTNU       | daniel.rettewander@ntnu.no   |
| David Wragg             | UiO        | David.wragg@smn.uio.no       |
| Emil Frøen              | UiO        | emilhfr@smn.uio.no           |
| Erlend T. North         | UiO        | erlendtn@uio.no              |
| Florian Flatscher       | NTNU       | florian.flatscher@ntnu.no    |
| Frida H. Danmo          | NTNU       | frida.h.danmo@ntnu.no        |
| Frida Sveen Hempel      | UiO/SINTEF | f.s.hempel@kjemi.uio.no      |
| Frode Håskjold Fagerli  | NTNU       | frode.h.fagerli@ntnu.no      |
| Haider Abbas            | UiO        | haiderab@uio.no              |
| Harald Pollen           | NTNU       | harald.n.pollen@ntnu.no      |
| Henrik                  | UiO        | henrik.sonsteby@kjemi.uio.no |
| Henrik                  | UiO        | h.l.petlund@kjemi.uio.no     |
| Henry                   | UiO        | henry.c2806@gmail.com        |
| Ina Winther             | UiO        | inarw@uio.no                 |
| Inger-Emma              | NTNU       | inger-emma.nylund@ntnu.no    |
| Ingrid Hallsteinsen     | NTNU       | ingrid.hallsteinsen@ntnu.no  |
| Irene Yuste-Tirados     | UiO        | i.t.yuste@smn.uio.no         |
| Jan                     | NTNU       | jan.schultheiss@ntnu.no      |
| Jan Torgersen           | NTNU       | jan.torgersen@ntnu.no        |
| Johnny Sannes           | UiO        | j.a.sannes@kjemi.uio.no      |
| Julian Walker           | NTNU       | julian.walker@ntnu.no        |
| Julie Hessevik          | UiO        | juliehes@kjemi.uio.no        |
| Kaiying Wang            | USN        | kaiying.wang@usn.no          |
| Kevin Both              | UiO        | k.g.both@smn.uio.no          |
| Kim Robert Gustavsen    | USN        | kgu@usn.no                   |
| Kristoffer Eggstad      | NTNU       | kristoffer.eggstad@ntnu.no   |
| Linda Joseph            | NTNU       | lindasjo@stud.ntnu.no        |
| Linn Rykkje             | UiO        | lmrykkje@gmail.com           |
| Madeeha Khalid Pedersen | UiO        | m.k.pedersen@smn.uio.no      |
| Magnus H. Sørby         | IFE        | magnus.sorby@ife.no          |
| Marcus Bentzen          | NTNU       | marcube@stud.ntnu.no         |
| Mari-Ann Einarsrud      | NTNU       | mari-ann.einarsrud@ntnu.no   |
| Markus J. Lid           | NTNU       | markus.j.lid@ntnu.no         |
| Martin Jensen           | UiO        | martin.jensen@kjemi.uio.no   |
| Martin Valldor          | UiO        | b.m.valldor@kjemi.uio.no     |

|                       |             |                                   |
|-----------------------|-------------|-----------------------------------|
| Mathilde Verne        | UiO         | mathilde.n.verne@gmail.com        |
| Michael Kelly         | NTNU        | michael.r.kelly@ntnu.no           |
| Mir Mehraj Ud Din     | NTNU        | mir.m.u.din@ntnu.no               |
| Mohsen Sadeqi-Moqadam | NTNU        | mohsen.sadeqi-moqadam@ntnu.no     |
| Nikolai H. Gaukås     | SINTEF      | nikolai.h.gaukas@sintef.no        |
| Nils P. Wagner        | SINTEF/NTNU | nils.peter.wagner@sintef.no       |
| Nora                  | NTNU        | nora.s.londal@ntnu.no             |
| Ola Nilsen            | UiO         | ola.nilsen@kjemi.uio.no           |
| Per Martin Rørvik     | SINTEF      | per.martin.rorvik@sintef.no       |
| Ragnar Strandbakke    | UiO         | ragnar.strandbakke@kjemi.uio.no   |
| Sachin M Chavan       | UiS         | Sachin.m.chavan@uis.no            |
| Sakis Chatzitakis     | UiO         | athanasios.chatzitakis@smn.uio.no |
| Salah Bra Amedi       | UiO         | s.b.amedi@kjemi.uio.no            |
| Sjur                  | UiO         | sjur.storhaug@gmail.com           |
| Stine Roen            | UiO         | stinmr@uio.no                     |
| Stine Sletvold        | NTNU        | stinesle@stud.ntnu.no             |
| Thor Lichtenthaler    | Matriks AS  | thor@matriks.no                   |
| Vajeeston Ponniah     | UiO         | vajeeston.ponniah@smn.uio.no      |
| Veronica Killi        | UiO         | vakilli@uio.no                    |
| Vilde Bråten          | NTNU        | vilde.braten@ntnu.no              |
| Viviann Hole Pedersen | NTNU        | viviann.hole@kleppnett.no         |
| Walace Kierulf-Vieira | UiO         | w.p.s.kierulf-vieira@kjemi.uio.no |
| Weicheng Hua          | NTNU        | weicheng.hua@ntnu.no              |
| Xiaolan Kang          | UiO         | xiaolank@uio.no                   |
| Xin Liu               | UiO         | xinliu@smn.uio.no                 |
| Xinwei Sun            | UiO         | xinwei.sun@smn.uio.no             |
| Yizhou Shen           | UiO         | yizhou.shen@smn.uio.no            |
| Zeeshan               | NTNU        | muhammad.z.khalid@ntnu.no         |
| Zhixin Yu             | UiS         | zhixin.yu@uis.no                  |
| Ørjan Espeseth        | Matriks AS  | oe@matriks.no                     |
| Øystein Gullbrekken   | NTNU        | oystein.gullbrekken@ntnu.no       |