

Solvay Workshop on “Plasma Technology and Other Green Methods for Nitrogen Fixation”

(Brussels, November 15-17, 2021- ULB Campus Plaine, Solvay Room)

PROGRAMME

MONDAY 15 NOVEMBER

08:30 - 09:15 Registration
09:15 - 09:30 Welcome speech

Morning session - Chair: Annemie Bogaerts

09:30 - 10:10 Tony Murphy (**Online**) - *Plasma catalytic production of ammonia: prospects, problems and possible solutions*

10:10 - 10:50 Volker Hessel (**Online**) - *Economic and Environmental Assessment of Small-scale Plasma-Assisted Ammonia Production Pathways - ‘at-Farm’*

10:50 - 11:20 COFFEE BREAK

11:20 - 12:00 Rune Ingels - *Can we manage without Haber Bosch?*

12:00 - 12:40 Johan Martens - *Green ammonia synthesis on a NO_x trap fed with NO_x from plasma-driven nitrogen gas oxidation from air (PNO CRA Process)*

12:40 - 14:00 LUNCH BREAK

Afternoon session - Chair: Marie-Paule Delplancke

14:00 - 14:40 Xin Tu - *Plasma catalysis: An emerging technology for decentralized ammonia synthesis*

14:40 - 15:20 Leon Lefferts - *Reaction Pathways in Plasma-Catalytic Ammonia Synthesis*

15:20 - 15:50 COFFEE BREAK

15:50 - 16:30 David Graves (**Online**) - *Plasma Technology and Nitrogen Fixation at Scale*

16:30 - 17:10 Maria Carreon - *Cold plasma ammonia synthesis: the search for a suitable catalyst*

17:30 - 19:00 POSTER SESSION

TUESDAY 16 NOVEMBER

Morning session - Chair: Nathalie De Geyter

- 09:00 - 09:40 Mihalis Tsampas - *Synergistic combination of plasma activation and electrocatalysis for nitrogen fixation by water*
- 09:40 - 10:20 Jens Norskov **(Online)** - Electrochemical nitrogen activation
- 10:20 - 10:50 COFFEE BREAK
- 10:50 - 11:30 Gabriele Centi - *Electrocatalytic direct nitrogen fixation: perspectives and gaps*
- 11:30 - 12:10 Yuvraj Birdja - *Electrocatalytic nitrogen fixation: perspectives, challenges and recent advances*
- 12:10 - 12:20 GROUP PHOTO
- 12:20 - 13:30 LUNCH BREAK

Afternoon session - Chair: Francois Reniers

- 13:30 - 14:10 Lea Winter **(Online)** - *Electrifying nitrogen transformations: Decarbonizing ammonia using plasma catalysis and electrochemical reduction of nitrate in wastewaters*
- 14:10 - 14:50 Mohan Sankaran **(Online)** - *Catalyst-free, electrolytic synthesis of ammonia from nitrogen and water by atmospheric-pressure plasma processes*
- 14:50 - 15:20 COFFEE BREAK
- 15:20 - 16:00 William Schneider - *Models and Opportunities in Plasma Catalysis*
- 16:00 - 16:20 Senne Van Alphen - *Plasma-based NO_x formation: potential avenue for sustainable N₂ fixation*
- 16:20 - 16:40 Kevin van 't Veer - *Plasma-catalytic NH₃ production in DBD plasma: Chemical kinetics modeling*
- 19:00 BANQUET

WEDNESDAY 17 NOVEMBER

Morning session - Chair: Rony Snyders

- 09:00 - 09:40 Fausto Gallucci - *Nitrogen fixation in plasma assisted catalytic reactor system*
- 09:40 - 10:00 Anton Nikiforov - *N₂ fixation in ns-discharge above water: from kinetics to energy costs*
- 10:00 - 10:40 Zdenko Machala - *Pulsed plasma discharges in air as an efficient strategy of nitrogen fixation and (H)NO_x transport into water*
- 10:40 - 11:10 COFFEE BREAK

- 11:10 - 11:50 Richard van de Sanden - *Plasma-electrochemical conversion processes using ion conducting membrane: a playground for detailed studies on the role of surface charge and electric fields on plasma-electrocatalytic processes*
- 11:50 - 12:30 Elsje Alessandra Quadrelli - *Mechanistic Aspects of Dinitrogen Cleavage and Hydrogenation to Ammonia in Catalysis and Organometallic Chemistry*
- 12:30 - 13:50 LUNCH BREAK

Afternoon session - Chair: Rino Morent

- 13:50 - 14:30 Evgeny Rebrov - *Plasma assisted synthesis of plasmonic titanium nitride nanoparticles and thin films*
- 14:30 - 14:50 Omid Samadi Bahnamiri - *Nitrogen fixation in a pulsed microwave discharge: combining experiment and modelling*
- 14:50 - 15:10 Kevin Rouwenhorst - *Reaction mechanisms and process considerations for plasma-driven nitrogen fixation*
- 15:10 FAREWELL COFFEE