



## MRS honors outstanding contributions to materials research at 2019 MRS Spring Meeting

The MRS Awards Program strives to acknowledge outstanding contributors to the progress of materials research and to recognize their exciting and profound accomplishments. We seek to honor those whose work has already had a major impact in the field, who have defined the frontiers of the field, who are outstanding exponents of their science, and young researchers whose work already leads to great expectations for future leadership.



### Helveg to receive MRS Innovation in Materials Characterization Award

Stig Helveg, a Fellow in the Atomic-Scale Analysis Department at Haldor Topsoe A/S, Denmark, and an affiliated professor at the Niels Bohr Institute at the University of Copenhagen is being honored with the Materials Research Society (MRS) Innovation in Materials Characterization Award “for pioneering atomic-scale transmission electron microscopy under reactive gas environments, leading to groundbreaking insights in catalysis, crystal growth, and corrosion.” He will receive the award at the 2019 MRS Spring Meeting in Phoenix, Ariz. The award is endowed by Gwo-Ching Wang and Toh-Ming Lu.

Helveg’s research is driven by the desire to resolve fundamental scientific challenges in heterogeneous catalysis. These challenges require insights into atomic-scale processes in complex materials systems

calling upon advances of atomic-resolution imaging techniques.

In recent years, electron microscopy has progressed significantly for studying nanostructured catalysts at the atomic level. In particular, atomic-resolution electron microscopy of catalysts immersed in reactive gas environments has become available by advances of differentially pumped electron microscopes and closed gas cells. Electron microscopy opens up avenues for monitoring catalysts at the atomic scale during exposure to gases at pressures of up to atmospheric levels, temperatures of up to several hundred degrees centigrade, and for correlating time-resolved observations with concurrent measurements of catalytic functionality. These emerging *in situ/operando* electron microscopy capabilities make information about surface dynamics and

reactivity accessible, and establish a foundation for “live” observations of dynamic processes and functional behavior at the atomic level. In Helveg’s presentation, he will outline such electron microscopy advances in catalysis research and discuss how dynamic observations can help uncover the role of gas-surface interactions on working catalysts.

Helveg received his PhD degree in physics from the University of Aarhus, Denmark, in 2000. His activities aim at integrating transmission electron microscopy (TEM) research into corporate R&D at Topsoe and at synergizing with public research programs and institutions worldwide. He is a group leader for the *in situ* TEM facility at Topsoe, with two state-of-the-art electron microscopes and nanoreactor technology. He has 96 published articles, as well as book chapters, reviews, and proceedings. Helveg received the Berzelius Prize from the Swedish Catalysis Society (2012), the Prestigious Danish Elite Research Prize (2018), and is a member of MRS and the Microscopy Society of America.

Helveg will be recognized at the 2019 MRS Spring Meeting Awards Ceremony and will present his talk on Wednesday, April 24, at the Phoenix Convention Center.

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