

BO BRUMMERSTEDT IVERSEN, PROFESSOR, DR. SCIENT ET TECHN.

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Civil Status

Born June 1967 in Aarhus, Denmark. Danish citizen. Married to Professor Birgit Schiøtt. Two daughters.

Education

- 1990: B. Sc. (Chemistry and Physics), Aarhus University (AU)
- 1993: M. Sc. (Crystallography), AU (incl. 1y at SUNY)
- 1995: Ph. D. (inorganic chemistry), AU (incl. 3m at ANU)
- 2002: Doctor of Science from Aarhus University ("X-ray charge density studies of chemical bonding")
- 2010: Doctor of Technology from DTU ("Phonon Glass Electron Crystal materials for thermoelectric energy conversion")

Employments

- 2004 -: Professor at Dep. of Chem., AU (Chair of Inorganic Chemistry)
- 2000 - 2003: Associate Professor at Dep. of Chem., AU
- 1998 - 2000: Assistant Professor at Dep. of Chem., AU
- 1996 - 1998: Post doc at UC Santa Barbara (with Prof. Galen Stucky)
- 1995 - 1996: Research Assistant Professor at Dep. of Chem., AU

Research

- Guest professor Stanford University (4m in 2019), University of Tsukuba, Japan (~3w/y since 2015), University of Western Australia (~1m/y since 2005)
- ~550 peer reviewed publications, 8 patents, ~20 popular science articles, WoS H-index ~71, Citations ~20000, i10 > 350
- ~5-10 invited lectures per year including many plenary/keynote presentations
- PI on grants totaling >80 mill. euro since 2000
- Intellectual responsible for IPR of the start-up company TEGnology
- PI on the DanMAX and SINCRYS beamlines at MAX4
- Reviewer of ~30 papers per year including all major journals
- Educated 60 PhDs, 90 MSc, 87 BSc, and 62 Postdocs as single responsible supervisor. My former students and post docs include 6 Full Professors, 8 Associate professors, 4 Assistant Professors, 8 Staff scientists, 2 senior managers and 50+ Scientists in Industry.

Select Awards & Honors

- 2017 Queen Margrethe II Science Prize (100 kkr)
- 2015 First Class Order of Dannebrog by Queen Margrethe II of Denmark
- 2014 Grundfos Prize
- 2011 Bjerrum-Brønsted-Lang Prize from the Royal Danish Academy of Science and Letters
- 2011 Elite Researcher Prize from the Danish Ministry of Higher Education and Science
- 2011 Fellow of the Danish Academy of Technical Sciences;
- 2010 Fellow of the Royal Danish Academy of Science and Letters;
- 2009 Rigmor and Carl Holst-Knudsen Science Prize (100 kkr);
- 1999 Silver Medal of the Royal Danish Academy of Sciences and Letters

Leadership

- **General Secretary and Treasurer** of the International Union of Crystallography (2021 -)
- **VILLUM Investigator** on Dynamic Crystallography (2020 -)
- **Director** of ESS Lighthouse SMART (2019-2028); AU Center for Integrated Materials Research iMAT (2017 -); Danish National Research Foundation Center for Materials Crystallography (2010 – 2019); Danish Strategic Research Council Center for Energy Materials (2008 - 2012)
- **Member** of the ESS Scientific Advisory Council (2013-2016); the Board of MAX VI (2016 - 2019), the SC of DanMax (2015 -); the ESS Scientific and Technical Advisory Panel (STAP) on Diffraction (2011-2014); the ESS STAP on Data Management (2017 - 2020); the Board of the Danish Chemical Society (2001-2005); the Board of DanSCATT (2004 -); the Board of the Dept. of Chemistry, AU (2008 - 2014); the Leadership team of iNANO (2013 -); the Board of LINX (2016 -); the Academic Council at NAT, AU (2004 -); the PhD Committee at NAT, AU (2013 -)
- **Scientific evaluation** at all levels (Institutes, Director, Head of Department, Dean, Prof. Assoc. Prof., Asst. Prof., post doc, PhD, MSc), ~5/year.
- **Reviewer ad hoc** for the EU, ERC, US NSF, 8 National Research Councils
- **Organizer** Annual Aarhus Winter Meeting (2005 -); Synchrotron summerschool (2009, 2018, 2021)
- **Leadership** courses by Learn2Lead (6 d), the DNRF (4 d), the Villum Foundation (3 d)

Teaching

38 courses taught since year 2000 (General Chemistry, ~200 students/year, 5 ECTS; Materials Chemistry, ~50 student/year, 10 ECTS)

Research directions

My work has focus on exploiting the tremendous power of structural studies to obtain a proper understanding of material properties. The research also involves materials synthesis, advanced property characterization as well as first principles computations. Parts of my work has been successfully transferred to industrial application.

I have studied numerous energy materials (thermoelectrics, batteries, catalysts) where detailed crystallographic analysis has been a prerequisite for discovering and rationalizing relationships between synthetic procedures, dimensionality, doping, actual composition, chemical bonding, structural disorder, or thermal motion, and the resulting thermal, electronic and chemical properties of the materials.

I have made original contributions to nanoparticle synthesis, characterization and structure with emphasis on application of supercritical fluids. In this respect, I introduced *in situ* X-ray studies of solvothermal reactions using SAXS, WAXS and PDF analysis. Through *in situ* analysis, I have obtained atomic scale insight into nucleation and growth. This information is used to tailor nanoparticle characteristics.

I am a leading figure in X-ray electron density (ED) research where I have pioneered synchrotron-based studies of chemical bonding and pushed method development e.g. in assessment of core electron deformation, powder X-ray diffraction or the maximum entropy method.

I have been among the pioneers of the 3D- Δ PDF method based on analysis of diffuse X-ray and neutron scattering from single crystals.

I have been involved in developing hydrothermal liquefaction (HTL) for conversion of biomass to biooil. A unique research scale flow reactor has been built, and parameter studies have uncovered essential aspects of the chemical conversion processes as well as subsequent upgrading of the oils.