




BIRGITTA ANDREASEN

CONTACT

 Fiskaaling
við Áir 11
FO-430 Hvalvík

 (+298) 774752

 birgitta@fiskaaling.fo

EDUCATION

2010 – 2015 **PHD - DANISH TECHNICAL UNIVERSITY**, Risø,
Denmark

Thesis title: Degradation of Solar Cells Comprising both Organic and Inorganic Materials

Supervised by: Dr. Kion Norrman and Prof. Frederik C. Krebs

Synopsis:

Organic solar cell (OSC) devices and OSC materials and the degradation of these devices and materials were characterized using time-of-flight secondary ion mass spectrometry (TOF-SIMS) and Atomic Force Microscopy (AFM).

2005 – 2010 **MASTER OF CHEMISTRY (MCHEM) - UNIVERSITY OF EDINBURGH**, Edinburgh, UK

Final Degree Classification: 2.1 Upper Second

Honours Project: Calculations of Packing Energies in Acryl Derivatives, Semi Classical Density Sums – PIXEL Method

Award: The 2010 Inorganic Project Prize

CONTINUING EDUCATION

2019 **Databases and SQL (7.5 ECTS)**, Fróðskaparsetur Føroya
2019 **Practical Course in Project Management (5 ECTS)**, Fróðskaparsetur Føroya

2018 **Statistics (5 ECTS)**, Fróðskaparsetur Føroya

RESEARCH INTERESTS

I have a strong interest in analytical and environmental chemistry and data science. With a background in various analytical techniques from my PhD research and in environmental monitoring from working at the Faroese Environment Agency. I'm very interested in incorporating these two fields into my research at Fiskaaling, to further study the fjord environments on its own and also to look at the connection and interaction between natural and human impact on these environments. Because of my experience and interest in data science, *e.g.*, statistical analysis, databases and automating data analysis workflows. I have been involved in multiple projects at Fiskaaling, where larger datasets have been at the centre of the project.

RESEARCH EXPERIENCE

- 2019- RESEARCHER - DEPARTMENT OF ECOLOGY, FISKAALING**
- 2015-2019 RESEARCHER - THE FAROESE ENVIRONMENT AGENCY**
Responsible for developing a database (SQL) for the environmental data collected and reported to the Environment Agency by aquaculture companies. R programming and statistical data analysis was used for automizing the generation of current rapports for every aquaculture station.
- Planning, coordination, statistical data analysis, and etc. of the Faroese Arctic Monitoring and Assessment programme (AMAP)
- UPLC - MS/MS analysis
- Diflubenzuron contamination analysis of seawater samples
 - Perfluorinated compounds (PFAS) analysis of different fish tissue
 - Method development and adjustments of sample preparation and instrument analysis
- 2010-2015 PHD PROJECT - DANISH TECHNICAL UNIVERSITY**
The PhD project was focused on characterizing organic solar cells, which includes alternative and new materials, individual layers and entire devices in order to study the morphology and the chemistry. The mapping of morphology and chemistry was used to (i) describe the architecture/composition of devices and materials, and (ii) to study degradation phenomena in devices and materials within organic solar cells. This was achieved by using the state-of-the-art analytical techniques time-of-flight secondary ion mass spectrometry (TOF-SIMS) and atomic force microscopy (AFM).

RESEARCH PROJECT PARTICIPATION:

2020 -	Føroysk botndjóra flokkingarskipan, <i>Havbúnaðarfelagið</i>
2020 -	AquaVitae, <i>Horizon 2020</i>
2019 - 2020	Botndjórasamfeløg – Eitt føroyskt sammetingargrundarlag, <i>Granskingarráði</i>
2019	Working Group - Lýsing av føroysku firðunum, <i>Umhvørvisstovan</i>
2019	Working Group - Temporal Trends Group (AMAP/OSPAR)
2016 - 2019	Arctic Monitoring and Assessment Programme (AMAP), <i>Dancea</i>
2018 - 2019	Maximizing non-target screening data, <i>NKG</i>
2017 - 2018	PCB í fiski, <i>Fiskivinnuroyndir</i>
2015 - 2016	PFC verkætlanin, <i>Granskingarráði</i>

CONSULTANCY ASSIGNMENTS:

2020 -	Zink á botni, <i>Bakkafrost</i>
--------	---------------------------------

ANALYSIS METHODS:

- Ultra-performance liquid chromatography tandem mass spectrometry (UPLC-MS/MS), *Waters*
- Time-of-flight secondary ion mass spectroscopy (TOF-SIMS), *IonTof*
- Atomic Force Microscopy (AFM), *Bruker, Veeco, Park og DME*

- Inverse Gas Chromatography (IGC)

PHD EXCHANGE AND INTERSHIPS

2012	PHD EXCHANGE (3 months), International Laboratory for Adaptive Biotechnology (I-LAB), SINANO, CAS, Suzhou, China
2012	PHD EXCHANGE (3 months), Department of Polymer Science and Engineering, Zhejiang University, Hangzhou, China
2008 - 2009	INDUSTRIAL TRAINEE (12 months), Material Science Department, Pfizer Ltd., Kent, UK

SELECTED PUBLICATIONS

PEER REVIEWED RESEARCH PAPERS

Andersen, T. R.; Dam, H. F.; **Andreasen, B.**; Hösel, M.; Madsen, M. V.; Gevorgyan, S. A.; Søndergaard, R. R.; Jørgensen, M.; Krebs, F. C. A Rational Method for Developing and Testing Stable Flexible Indium- and Vacuum-Free Multilayer Tandem Polymer Solar Cells Comprising up to Twelve Roll Processed Layers. *Sol. Energy Mater. Sol. Cells* 2014, 120 (PART B), 735–743. <https://doi.org/10.1016/j.solmat.2013.07.006>.

Jørgensen, M.; Carlé, J. E.; Søndergaard, R. R.; Lauritzen, M.; Dagnæs-Hansen, N. A.; Byskov, S. L.; Andersen, T. R.; Larsen-Olsen, T. T.; Böttiger, A. P. L.; **Andreasen, B.**; et al. The State of Organic Solar Cells—A Meta Analysis. *Sol. Energy Mater. Sol. Cells* 2013, 119, 84–93. <https://doi.org/10.1016/j.solmat.2013.05.034>.

Helgesen, M.; Carlé, J. E.; **Andreasen, B.**; Hösel, M.; Norrman, K.; Søndergaard, R.; Krebs, F. C. Rapid Flash Annealing of Thermally Reactive Copolymers in a Roll-to-Roll Process for Polymer Solar Cells. *Polym. Chem.* 2012, 3 (9), 2649–2655. <https://doi.org/10.1039/c2py20429k>.

Jørgensen, M.; Norrman, K.; Gevorgyan, S. A.; Tromholt, T.; **Andreasen, B.**; Krebs, F. C. Stability of Polymer Solar Cells. *Adv. Mater.* 2012, 24 (5), 580–612. <https://doi.org/10.1002/adma.201104187>.

Larsen-Olsen, T. T. T.; Andersen, T. R. T. R.; **Andreasen, B.**; Böttiger, A. P. L. A. P. L.; Bundgaard, E.; Norrman, K.; Andreasen, J. W. J. W.; Jørgensen, M.; Krebs, F. C. F. C. Roll-to-Roll Processed Polymer Tandem Solar Cells Partially Processed from Water. *Sol. Energy Mater. Sol. Cells* 2012, 97, 43–49. <https://doi.org/10.1016/j.solmat.2011.08.025>.

Larsen-Olsen, T. T. T.; **Andreasen, B.**; Andersen, T. R. T. R.; Böttiger, A. P. L. A. P. L.; Bundgaard, E.; Norrman, K.; Andreasen, J. W. J. W.; Jørgensen, M.; Krebs, F. C. F. C. Simultaneous Multilayer Formation of the Polymer Solar Cell Stack Using Roll-to-Roll Double Slot-Die Coating from Water. *Sol. Energy Mater. Sol. Cells* 2012, 97, 22–27. <https://doi.org/10.1016/j.solmat.2011.08.026>.

Carlé, J. E.; **Andreasen, B.**; Tromholt, T.; Madsen, M. V.; Norrman, K.; Jørgensen, M.; Krebs, F. C. Comparative Studies of Photochemical Cross-Linking Methods for Stabilizing the Bulk Hetero-Junction Morphology in Polymer Solar Cells. *J. Mater. Chem.* 2012, 22 (46), 24417. <https://doi.org/10.1039/c2jm34284g>.

Andreasen, B.; Tanenbaum, D. M. D. M.; Hermenau, M.; Voroshazi, E.; Lloyd, M. T.; Galagan, Y.; Zimmermann, B.; Kudret, S.; Maes, W.; Lutsen, L.; et al. TOF-SIMS Investigation of Degradation Pathways Occurring in a Variety of Organic Photovoltaic Devices--the ISOS-3 Inter-Laboratory Collaboration. *Phys. Chem. Chem. Phys.* 2012, 14 (33), 11780–11799. <https://doi.org/10.1039/c2cp41787a>.

Andersen, T. R.; Larsen-Olsen, T. T.; **Andreasen, B.**; Böttiger, A. P. L.; Carlé, J. E.; Helgesen, M.; Bundgaard, E.; Norrman, K.; Andreasen, J. W.; Jørgensen, M.; et al. Aqueous Processing of

Low-Band-Gap Polymer Solar Cells Using Roll-to-Roll Methods. ACS Nano 2011, 5 (5), 4188–4196. <https://doi.org/10.1021/nn200933r>.

THESIS

Andreasen, B., Degradation of Solar Cells Comprising both Organic and Inorganic Materials; Lyngby, Denmark: Technical University of Denmark, 2015.

BOOK CHAPTERS

Andreasen, B.; Norrman, K. Chemical and Physical Probes for Studying Degradation. In Stability and Degradation of Organic and Polymer Solar Cells; Krebs, F. C., Ed.; John Wiley & Sons, Ltd.: Chichester, West Sussex, 2012; pp 17–38. <https://doi.org/10.1002/9781119942436.ch2>.

Larsen-Olsen, T. T.; Dam, H. F.; **Andreasen, B.**; Tromholt, T.; Krebs, F. C. Polymersolceller. In Aspekter af dansk kemi i det 20. og 21. århundrede; KemiForlaget, 2012.

TECHNICAL REPORTS

Mortensen, H., S.; á Norði, G.; **Andreasen, B.**; Johannesen, T., T. Botnsjórasamfeløg - Eitt føroyskt sammetingargrundarlag; Fiskaaling rit, við Áir, Faroe Islands, 2020

Andreasen, B.; Hoydal, K.; Mortensen, R.; Erenbjerg, S. V.; Dam, M. AMAP Faroe Islands 2013 - 2016: Heavy Metals and POPs Core Programme; Argir, Faroe Islands, 2019.

Johannesen, H. V.; **Andreasen, B.**; Petersen, M. S.; Halling, J.; Mikkelsen, B.; Mikalsen, S.-O.; Dam, M. Perfluorerað Alkylevni í Fiski; Argir, 2016.

VOLUNTEER WORK:

2018 -

Board member of the Faroese Research Society