

3rd Bi-Annual Symposium Future Ocean

13.09 – 16.09.2010, Christian-Albrechts-Universität zu Kiel, Audimax, Kiel, Germany

Mini-Symposium

“Chemistry at Marine Interfaces”

Wednesday, 15.09 – Thursday, 16.09.2010

PROGRAMME

The sea-surface microlayer consists mostly of organic matter, including surface-active substances such as lipids, glycans, proteinaceous compounds and hydrocarbons and influences the ocean-atmosphere coupling as well as the surface chemistry of sea-borne aqueous aerosols by modulating the physical, chemical and biological processes at the interface. The control over air-sea gas exchange by the microlayer affects radiative forcing and hence climate. Moreover, intense solar irradiation induces unique heterogeneous photochemical transformations. Last but not least, bioadhesion and biofouling constitute additional marine interfacial phenomena that are of major importance for the Future Ocean. Improving our understanding of the underlying processes requires close interaction among experts in a diversity of fields, e.g., surface science, spectroscopy, chemical kinetics, or environmental chemistry, who are invited to an interdisciplinary platform for exchanging latest results and developing novel concepts and ideas.

Scientific & Organization Committee:

Gernot Friedrichs, Ocean Surface Chemistry & Reaction Kinetics, Kiel University, Kiel

Roland von Glasow, Marine and Halogen Chemistry, University of East Anglia, Norwich, UK

Friedrich Temps, Molecular Physical Chemistry, Kiel University, Kiel

Douglas W. R. Wallace, Chemical Oceanography, IFM-GEOMAR, Kiel

Monday 9:00-10:30 Symposium Opening Session

18:00- Icebreaker

Wednesday 9:00-10:30 Plenary Session

Chair: G. Friedrichs

40+5 Michael Grunze (University of Heidelberg, Germany) (Abstract page 21)
Chemical and Physical Cues in Marine Fouling

40+5 Heather C. Allen (Ohio State University, USA) (page 1)
Molecular Organization at the Ocean Surface: Ions, Water, and the Microlayer

Wednesday 14:00-15:35 Session I Ocean-Atmosphere Coupling

Chair: R. von Glasow

30+5 Barbara D'Anna (IRCELYON, Institut de Recherches sur la Catalyse et l'Environnement de Lyon, France), C. George (IRCELYON, France), J. Donaldson (University of Toronto, Canada), M. Amman (Paul Scherrer Institute, Switzerland), A. Jammoul (IRCELYON, France), D. Reeser (University of Toronto, Canada) (page 9)
Photo-Activated Reactions at the Air-Sea Interface

30+5 Franz Geiger (Northwestern University, Evanston, USA) (page 18)
Chirality in Ocean-Atmosphere Coupling

20+5 Bastian Kern (Max Planck Institute for Chemistry, Mainz, Germany), A. Pozzer (Energy, Environment and Water Research Center, Cyprus), P. Jöckel (DLR, Germany) (page 29)
Coupling an Ocean Model to the ECHAM5/MESSy Atmospheric Chemistry (EMAC) Model

Wednesday 16:00-17:25 Session II Surface Films

Chair: R. Zellner

20+5 Kristian Laß, G. Friedrichs (Kiel University, "Future Ocean", Germany) (page 34)
VSGF Fingerprints of the Ocean Nanolayer

20+5 A. Rouvière, Markus Ammann (Paul Scherrer Institute, Switzerland) (page 45)
Effect of Fatty Acid Coatings on Ozone Uptake to Deliquesced KI/NaCl Aerosol Particles

30+5 Martina Roeselová (Academy of Sciences, Czech Republic) (page 44)
Organic Films on Water Surface and Water on Organic Surfaces: An Atomistic Insight

Wednesday 17:30-18:45 Poster Session All Subtopics

A. Křepelová, T. Huthwelker, H. Bluhm, Markus Ammann (Paul Scherrer Institute, Switzerland) (page 32)

Surface chemical properties of cold liquid and frozen sea salt solutions probed by X-ray photoelectron and electron yield X-ray absorption spectroscopy

Natalja Balzer, S. Bleicher, J. Ofner, C. Zetzsch, K. Kotte (Atmospheric Chemistry Research Laboratory, BayCEER, University of Bayreuth, Germany) (page 3)

Release of reactive halogen species from a simulated salt pan, using dry and wet solid NaCl/NaBr and environmental samples surfaces in smog-chamber experiments

Meike Becker, G. Friedrichs (Kiel University, Physical Chemistry, "Future Ocean", Germany), B. Fiedler, P. Fietzek, A. Körtzinger (IFM-GEOMAR, "Future Ocean", Kiel, Germany) (page 4)
CRDS Based Field Measurements of Surface Water $p\text{CO}_2$ and $\delta^{13}\text{C}(\text{CO}_2)$ on two Atlantic Transects

S. Frick, Bernd Hartke (Kiel University, Theoretical Chemistry, "Future Ocean", Germany) (page 16)

Properties and reactions of molecules at water surfaces

Joscha Kleber, G. Friedrichs (Kiel University, "Future Ocean", Germany) (page 31)

Oxidation kinetics of an oleic acid monolayer at the air-water interface

Christian van der Linde, R. F. Höckendorf, O. P. Balaj, M. K. Beyer (Kiel University, Germany) (page 35)

Reactions of Nitrogen Oxides with Hydrated Radical Anions of Atmospheric Interest

Evridiki Mesarchaki, J. Williams (Max-Planck Institute for Chemistry, Mainz, Germany) (page 38)

Air-sea exchange of organic compounds in the Heidelberg wind-wave facility

Arne Stindt, K. Laß, T. K. Lindhorst, G. Friedrichs (Kiel University, "Future Ocean"/Organic Chemistry, Germany) (page 53)

VSG spectra of sugar derivatives as proxies for ocean nanolayer studies

Christian Stolle, K. Nagel, M. Labrenz, K. Jürgens (Leibniz Institute for Baltic Research, Warnemünde, Germany) (page 53)

Bacterial Life in the Air-Water Interface: Studies from the Baltic Sea

Oliver Wurl, E. Wurl, L. Miller, K. Johnson, and S. Vagle (Institute of Ocean Sciences, Fisheries and Oceans, Sidney, Canada) (page 60)

Global Distribution of Sea-Surface Microlayers

Wednesday 19:00 Symposium Dinner

Joint dinner together with participants of seven mini-symposia

Thursday 14:00-15:35 Session III Heterogeneous Processes

Chair: F. Geiger

- 30+5 Reinhard Zellner (University of Duisburg-Essen, Germany) (page 60)
Heterogeneous Chemistry of Atmospheric Surfaces in Marine Environments
- 20+5 F. Siekmann, H.-U. Krüger, S. Bleicher, Cornelius Zetzsch (Atmospheric Chemistry Research Laboratory, BayCEER, University of Bayreuth, Germany), W. Behnke (Fraunhofer-Institute for Toxicology and Experimental Medicine, Hannover, Germany) (page 61)
Halogen Activation from Sea-Aalt Aerosol, Studied in Smog-Chamber Experiments and Model Calculations
- 30+5 Hartmut Herrmann (Leibniz Institute for Tropospheric Research, Leipzig, Germany) (page 25)
Atmospheric Multiphase Chemistry and Ocean-Atmosphere Interaction

Thursday 16:00-17:25 Session IV Air-Sea Gas Exchange

Chair: H. Herrmann

- 20+5 Irene Stemmler (Max Planck Institute for Chemistry, Mainz, Germany), G. Lammel (MPI Chemie Mainz & Masaryk University, Brno, Czech Republic) (page 52)
Air-Sea Exchange of Semivolatile Organic Compounds: Wind and/or Sea Surface Temperature Control of Volatilization Studied Using a Coupled General Circulation Model
- 20+5 Hiroshi Tanimoto, S. Inomata, A. Ooki (National Institute for Environmental Studies, Japan), S. Kameyama, U. Tsunogai (Hokkaido University, Japan), S. Takeda (Nagasaki University, Japan), H. Obata, A. Tsuda, M. Uematsu (the University of Tokyo, Japan) (page 56)
High-Resolution Measurement of Multiple Volatile Organic Compounds Dissolved in Seawater Using Equilibrator Inlet-Proton Transfer Reaction-Mass Spectrometry (EI-PTR-MS)
- 30+5 Roland von Glasow, R. Sommariva, M. Martino (University of East Anglia, UK) (page 19)
Halogen Chemistry in the Tropical Atlantic Ocean Boundary Layer

Thursday 17:30-19:00 Laboratory Tours

Physical Chemistry Labs. Meet in front of conference office.

Thursday 19:00 Optional Joint Dinner