Two years with Galathea 3 in Denmark

Thursday, May 28th 2009 at 14:00

Auditorium 3-03 at KU/LIFE

Thorvaldsensvej 40, 1871 Frederiksberg C

Selskabet for Analytisk Kemi and Dansk Selskab for Miljøkemi hereby invite all to an afternoon onboard the Galathea 3, two years after the return of the expedition.

Tilmelding til jch@life.ku.dk

Program: 14 00-17 30

1. World Wide Metals in mussel by Galathea 3 – Martin M. Larsen
2. Chemical challenges from the Roseobacter strains – Kristian Fog Nielsen
3. PARAFAC modeling of fluorescence excitation-emission spectra of fish bile for rapid en route screening of PAC exposure – Jan H. Christensen (Krabbe-Jan)
4. The measurement of mercury fractions on a 8.5 month circumnavigation, Galathea 3 – Henrik Skov
5. SURPRISE

Social program: 17 30-19 30

1. Wonderful dinner

World Wide Metals in mussel by Galathea 3

By Martin M. Larsen

With Galathea3 as platform, mussels collected from five continents was analyzed for metals using ICP-MS and AAS methods, and patterns in the pollution was investigated using multivariate techniques. Comparison of results with background concentrations and assessment criteria will be demonstrated. As a special bonus of using ICP-MS, the use of lead isotope ratios to describe local and global pollution will be illustrated.

Chemical challenges from the Roseobacter strains

By Kristian Fog Nielsen

During the cruise antibacterial strains were collected both from the water column and samples (fish, stones, mussels, animals etc.), and it appears that strains collected from solid objects were generally more antibacterial than bacteria from the water column. Since most strains requires 1-2% sea salts for growth and mainly produces very hydrophilic bio-actives, extraction and sample preparation poses significant challenges. Besides this LC-MS is also significantly impacted from running samples, since the ion-source quickly suffers from cone blockages caused by the salts.

Rapid en route measurements of oil pollution in fish bile during the Galathea 3 expedition

By Jan H. Christensen (Krabbe-Jan)

Polycyclic aromatic compound (PAC) metabolites in fish bile can be used as biomarkers for recent environmental exposure to PACs. We developed a method during the Galathea 3 expedition that can be used for en-route rapid screening of non-hydrolyzed fish bile samples. The method is based on excitationemission fluorescence spectroscopy combined with parallel factor analysis (PARAFAC) and may constitute an alternative to fixed wavelength fluorescence and synchronous fluorescence spectroscopy (SFS).

The measurement of mercury fractions on a 8.5 month circumnavigation, Galathea 3

By Henrik Skov

A TEKRAN 2537A mercury vapour analyzer with a TEKRAN 1130 mercury speciation unit were used to measure gaseous elemental mercury (GEM) and gaseous oxidized mercury (GOM) during an eight and a half month circumnavigation expedition. The cruise data give a global overview of GEM and GOM distribution in the marine boundary layer (MBL). These data were supplemented with simultaneous measurements of meteorological data, O3, CO, and NO/NOx. The measurements were analyzed and compared to the GEOS-Chem mercury model. The global extent of the data makes it possible to test hypotheses within the model, regarding the dynamics of mercury in the MBL, to an extent that have not been done before. Like earlier cruises, we observe significantly higher background concentrations of GEM in the northern hemisphere than the southern hemisphere, a feature that is not described well in the model. Further data analysis and test of model hypotheses on the basis of the cruise are ongoing.