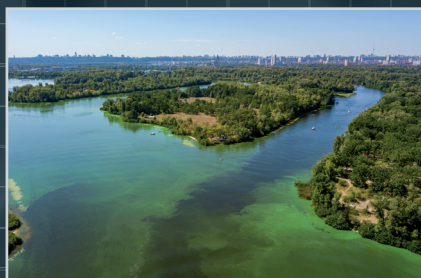
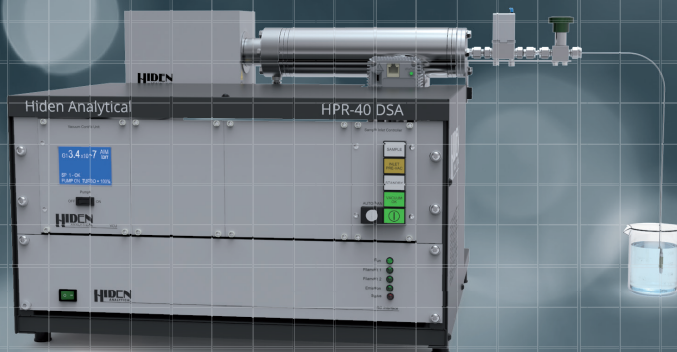


Membrane Inlet Mass Spectrometry (MIMS)

SOLUTIONS FOR IN-SITU DENITRIFICATION STUDIES



Water quality is an essential factor in our lives. It is also a major problem in many parts of the world today. Denitrification is a critical process in stream ecosystems, helping to remove excess nitrate from agricultural and urban runoff, which can otherwise lead to water pollution and ecosystem damage. The Hiden HPR-40 DSA MIMS and the pQA provide continuous, in situ measurement of dissolved gases like O_2 , CO_2 , N_2 , and N_2O giving valuable insights into the efficiency of the treatment process, offering a more accurate and dynamic picture compared to traditional laboratory methods. By using MIMS, we can better understand and manage nutrient pollution, helping protect our waterways and ecosystems.



Key Features

- ▶ The Hiden HPR-40 DSA MIMS and the pQA systems are offered with a wide range of sampling inlets, including flow-through inlets with integrated thermocouple for *in-situ* temperature measurement, dual probe inlets for simultaneous analysis in and above liquid, and enzyme kinetics probes.
- ▶ Sensitivity to < 0.5 PPB.
- ▶ It allows for *in-situ* mass determination of dissolved species with real time data acquisition and display.
- ▶ The atomic mass range is 200 amu as standard, with 300 or 500 amu mass ranges offered as options.
- ▶ Software applications provide for user control of the mass spectrometer, inlet system control, data acquisition from the mass spectrometer and external devices, temperature and pH probes.

HPR-40 DSA Membrane Inlet Mass Spectrometer - MIMS

APPLICATIONS FOR ANALYSIS OF BODIES OF WATER

The Hiden HPR-40 DSA MIMS and the pQA are versatile, robust and portable instruments for use in laboratory and field based applications including:

Diurnal variation of stream denitrification in a southeast China coastal watershed

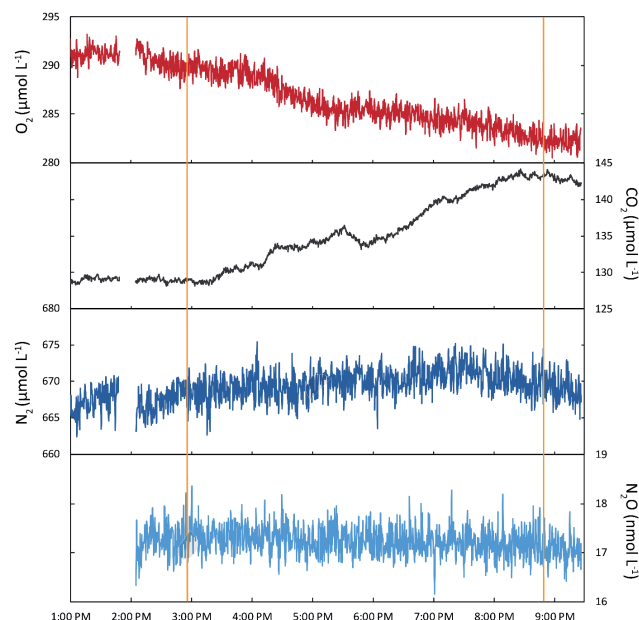
- ▶ **China** - Coastal and Ocean Management Institute, Xiamen University.
- ▶ **Sweden** - Dept. of Water Resources Engineering, Lund University.

Enhancing denitrification using a carbon supplement generated from the wet oxidation of waste activated sludge

- ▶ **Australia** - University of Queensland.
- ▶ **New Zealand** - Sustainable Design, Scion.

Low hyporheic denitrification in headwater streams revealed by nutrient injections and in situ gas measurements

- ▶ **France** - University of Rennes, Rennes.
- ▶ **USA** - Department of plant and wildlife sciences, Brigham Young University.



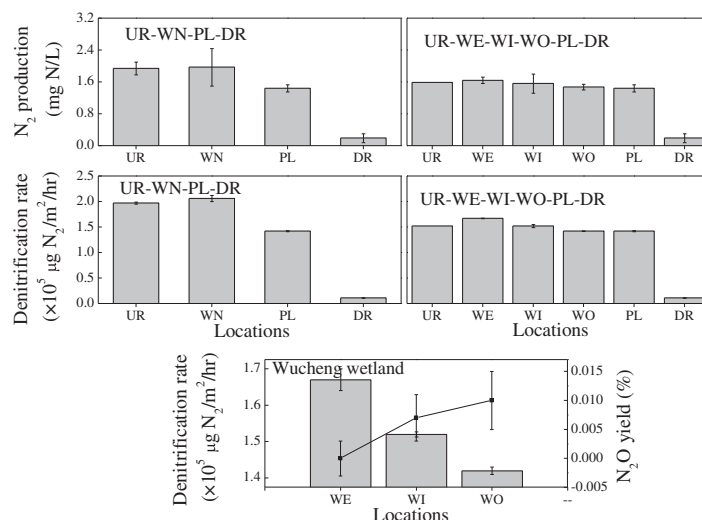
Changes in CO_2 , O_2 , N_2 et N_2O concentrations during the continuous injection of sodium acetate and potassium nitrate. The beginning and the end of the injection are indicated with orange lines.

Methane stimulates massive nitrogen loss from freshwater reservoirs in India

- ▶ **India** - CSIR-National Institute of Oceanography, Goa.
- ▶ **Germany** - Max-Planck Institute for Marine Microbiology, Bremen.
- ▶ **UK** - National Oceanography Centre, University of Southampton.

Dissolved nitrous oxide and emission relating to denitrification across the Poyang Lake aquatic continuum

- ▶ **China** - Institute of Geographical Sciences and Natural Resources Research, Chinese Academy of Sciences, Beijing.
- ▶ **China** - Nanjing Institute of Geography and Limnology, Chinese Academy of Sciences, Nanjing.
- ▶ **China** - Graduate University of the Chinese Academy of Sciences, Beijing.



Spatial variation of N_2 production, denitrification rate and the ratio of N_2O production/ N_2 production across the Poyang Lake aquatic continuum.

Effects of multiple antibiotics exposure on denitrification process in the Yangtze Estuary sediments

- ▶ **China** - East China Normal University, Shanghai.