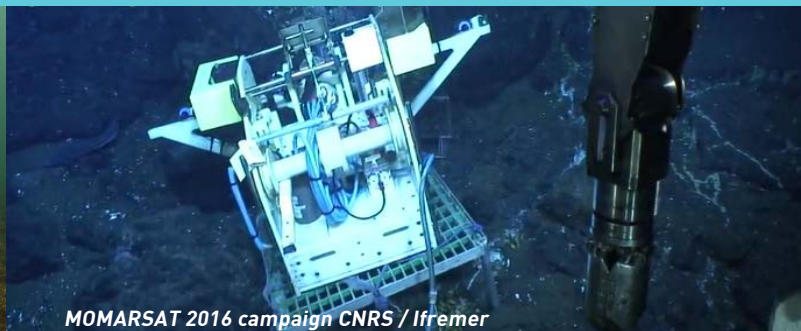


CHAMAUT project CNRS / Ifremer



MOMARSAT 2016 campaign CNRS / Ifremer

Description

- Coastal and Deep-sea *in situ* chemical analysis (Ammonia, Phosphate, Silicate, Nitrate, Iron, Sulfur, Manganese)
- Measuring range: characteristic of the marine environment, compatibility with estuaries and fresh waters
- Analytical performances comparable to the reference methods in laboratory
- Flow Injection Analysis, possibility of Continuous and Reverse Flow Analysis
- Detection methods: Colorimetry and Fluorimetry

Coastal, deep sea and offshore applications

- Nutrients measurement for Aquaculture
- Environmental monitoring for Renewable Marine Energy
- ReInjection waters surveillance for Oil & Gas
- Research

Innovative advantages by Ifremer

- Miniaturization, engraved manifold in PMMA, LED spectrophotometric modules and synchronous detection of various parameters, marinisation and waterproofing
- Nitrates detection using photoderivation
- Autonomous functioning (minimising power and reagent consumption)
- Patented technology: Sulfate analysis in reinjection waters FR3010791B1

Deployment references

- Coastal monitoring:
 - Aquaculture survey: Vilaine Bay (4-7 months 2009, 2011)
 - Oyster nursery: Argenton (1 month, 2005)
 - Coastal benthic chambers: Thau pond (10 x 24h, 2017)
- Hydrothermal deep-sea surveys (- 2,000 m):
 - 31 dives on ROV and Submersible on the Mid Atlantic Ridge (2010-2017)
 - 11 deployments on deep-sea observatories >10 months (EMSO Azores Atlantic Ocean, ONC Pacific Ocean; 2010-2017)



CHEMINI coastal version

Parameters	Ammonia NH_4^+	Phosphate PO_4^{3-}	Silicate Si(OH)_4	Nitrate NO_3^-	Nitrite NO_2^-
Accuracy	2.4% (5 $\mu\text{mol.l}^{-1}$, n=5)	4.5% (2 $\mu\text{mol.l}^{-1}$, n=4)	2.8% (5 $\mu\text{mol.l}^{-1}$, n=4)	2% (2 $\mu\text{mol.l}^{-1}$, n=3)	3.2% (1.5 $\mu\text{mol.l}^{-1}$, n=3)
Sensitivity	0.05 $\mu\text{mol.l}^{-1}$	0.04 $\mu\text{mol.l}^{-1}$	0.1 $\mu\text{mol.l}^{-1}$	0.017 $\mu\text{mol.l}^{-1}$	0.004 $\mu\text{mol.l}^{-1}$
Wavelength	Fluorimetry	Fluorimetry	Colorimetry	Colorimetry	Colorimetry
Measure/Excitation	370 nm	470 nm	480 nm	540 nm	540 nm
Detection/Reference	425 nm	550 nm	810 nm	630 nm	630 nm
Measurement time	10 min	4 min 30	8 min	10 min	6 min
Depth rating	0 m - 10 m (optional)				
Output	RS 232				
Software	IHM Chemini				
Power supply	12 volt DC				
Weight (in air)	3.5 kg				
Dimensions	225 x 146 x 120 mm				
Sensor type	Wet chemistry Nutrients				



CHEMINI deep sea version

Parameters	Iron Fe	Sulfur H_2S	Manganese Mn
Accuracy	5% (6 $\mu\text{mol.l}^{-1}$)	3.5% (10 $\mu\text{mol.l}^{-1}$)	2% (6 nmol.l^{-1})
Sensitivity	0.3 $\mu\text{mol.l}^{-1}$	0.33 $\mu\text{mol.l}^{-1}$	0.12 nmol.l^{-1} (5 min pre-concentration)
Wavelength	Colorimetry		
Measure	570 nm	630 nm	620 nm
Reference	810 nm	810 nm	810 nm
Sample rate	4 min	4 min	8 min
Depth rating	0 m - 6000 m		
Output	RS 232		
Software	IHM Chemini		
Power supply	24 volt DC		
Weight	In air 6.5 kg ; in sea water 3.5 kg		
Dimensions	240 x 125 x 220 mm + 264 x \varnothing 140 mm		
Sensor type	Wet chemistry		



Contact

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