

## New Carbon Coulometer

for high-precision DIC analysis to be launched soon

### Technical features and performance:

- High-precision %T determination by **double-beam photometric detection**.
- Accurate electric current supply by the **temperature-controlled shunt resistor**.
- Stable analyses using **temperature-controlled coulometric cells**.
- Personal computer control *via* **USB connection**.
- **Short conditioning time** at the initiation of the analysis.
- **Repeatability** of  $\pm 0.019\%$  ( $152.30 \pm 0.03 \mu\text{g C}$ ;  $n=58$ ) was attained when successively analyzing the  $\sim 30\text{cm}^3$  of  $1\%$   $\text{CO}_2$  in air (at  $T / \text{K} = 293.15$  and  $P / \text{hPa} = 1013.25$ ).
- **Repeatability** of  $\pm 0.6 \mu\text{mol kg}^{-1}$  was estimated from 188 pairs of replicate analyses on board *R/V Mirai* during its WHP P21 cruise conducted in 2009.



Cell compartment



Controller

### Status and contact:

- **Downsizing** of the Cell compartment etc. now underway.
- To be commercially available from Nippon ANS Co. in Tokyo **in May 2010**.
- For more information, contact Dr Masao Ishii <mishii@mri-jma.go.jp> or Dr Akihiko Murata <murataa@jamstec.go.jp> until it becomes commercially available.

### Acknowledgment:

- Development of a new coulometer has been promoted as a part of a collaborative program by Advanced Earth Science & Technology Organization (**AESTO**), Meteorological Research Institute (**MRI**) of the Japan Meteorological Agency and Japan Agency for Marine-Earth Science and Technology (**JAMSTEC**) funded by the Ministry of Education, Culture, Sports, Science and Technology (**MEXT**) for FY2005-2007 to contribute to a 10-year implementation plan for a Global Earth Observation System of Systems (**GEOSS**).