



Identifiant du résumé : 297

## Status report of AixMICADAS performances with small CO<sub>2</sub> gas samples

### Contenu

Installed in April 2014 in Aix-en-Provence (France), the new AMS system dedicated to <sup>14</sup>C, AixMICADAS (Bard et al. 2015 NIMB), has been used to measure more than 2000 gas sample. Thanks to the gas interface system (GIS, Wacker et al. 2013 NIMB, IonPlus) small CO<sub>2</sub> samples (<120 µgC) from carbonates (by acidification with the carbonate handling system, CHS), aerosols and collagen (by combustion with an elemental analyzer, EA), collagen and in situ <sup>14</sup>C (CO<sub>2</sub> sealed in closed ampoules) can easily be measured with AixMICADAS without the need of a graphitization step.

Typical <sup>12</sup>C- currents of 15-20 µA are extracted from the ion source for sample mass in a range of 20-100 µgC and below 10 µA for very small samples (<15 µgC). Multiple targets can be used to improve the precision of the measurement when needed (Aix-10347.2.1 at 19680 ± 180 14C yr BP for 1 target and 19530 ± 115 14C yr BP for 3 targets).

Most of the measurements have been performed to test the performances of the instrument and evaluate a long-term reproducibility of c.a. 7 ‰ on oxa2 at F14C = 1.3390, N=90 measurements. Our reference blank sample is a bottle of CO<sub>2</sub> (5% of dead CO<sub>2</sub> and 95% of helium) which gives similar blank level than the one measured with IAEA-C1 samples on the CHS device at ca. 0.0013 in F14C, equivalent to 52000 14C yr BP (N=37). This indicates that additional interfaces are not the main source of the residual contamination. However, combusting blank samples with the EA coupled to the GIS leads to higher values which are linked to residual carbon of the metallic boats. The blank level measured on IAEA-C1 and collagen blank samples combusted in small silver boats is around 0.007 in F14C, equivalent to 40000 14C yr BP. We will see that the knowledge of this constant contamination is a key point when measuring really small samples (<20 µgC).

We will also discuss about other technical aspects such as cross contamination effects and <sup>13</sup>C fractionation linked to the injection of gas samples.

### Student Submission

No

**Primary author(s) :** Dr. TUNA, Thibaut (CEREGE, Aix-Marseille University, CNRS, IRD, INRA, Collège de France)

**Co-author(s) :** FAGAULT, Yoann (CEREGE); Prof. BARD, Edouard (CEREGE, Aix-Marseille University, CNRS, IRD, INRA, Collège de France)

**Presenter(s) :** Dr. TUNA, Thibaut (CEREGE, Aix-Marseille University, CNRS, IRD, INRA, Collège de France)

**Thématiques affectées :** WSC - Small C-14 samples [Workshop]

**Type de contribution :** Oral Presentation

Déposé par TUNA, Thibaut le Thursday 20 April 2017