



Geel, 19 June 2013

JRC.D.4/SR/CV/ccp/D-ARES(2013) 2326503

The IRMM Regular European Interlaboratory Measurement Evaluation Programme

REIMEP-22: Interlaboratory Comparison on U Age Dating

The determination of the production date of a uranium certified test sample

The Regular European Interlaboratory Measurement Evaluation Programme (REIMEP) was started by IRMM in 1982 to carry out external control of the quality of the measurements of the nuclear fuel cycle materials. In REIMEP campaigns, samples matching materials analysed routinely in the nuclear fuel cycle are sent throughout the world to participating laboratories for measurements.

We would like to announce the forthcoming REIMEP-22 interlaboratory comparison: "U Age Dating - Determination of the production date of a uranium certified test sample" and invite laboratories to participate.

The determination of the production date of a uranium material (i.e. the last chemical separation date of this material) can be based either on the disequilibrium between the two nuclides ^{230}Th - ^{234}U or between the two nuclides ^{231}Pa - ^{235}U .

Participants in REIMEP-22 will receive one low-enriched uranium sample (~ 4%) containing either 20 mg or 50 mg of uranium. The sample is in solid uranyl-nitrate form.

Depending on the type of technique used by the participating laboratory to measure the sample, either a 20 mg or a 50 mg U sample will be dispatched to the laboratory. The participants planning to use mass spectrometric methods will receive a 20 mg U sample, whereas laboratories planning to use radiometric methods (e.g. alpha-spectrometry) will receive a 50 mg U sample.

Therefore, in order to determine the production date of the material, participating laboratories will be asked to measure and report either the isotope amount ratio $n(^{230}\text{Th})/n(^{234}\text{U})$ for the 20 mg uranium samples or the activity ratio $A(^{230}\text{Th})/A(^{234}\text{U})$ for the 50 mg uranium samples and to report the calculated production date of the certified test sample (compulsory).

Moreover, the participants will have the possibility as well (optional) to report the date of production of the sample by measuring the isotope amount ratio $n(^{231}\text{Pa})/n(^{235}\text{U})$ for the 20 mg uranium sample or the activity ratio $A(^{231}\text{Pa})/A(^{235}\text{U})$ for the 50 mg uranium sample.

The isotope amount ratio/activity ratios, $n(^{230}\text{Th})/n(^{234}\text{U})$, $A(^{230}\text{Th})/A(^{234}\text{U})$ or $n(^{231}\text{Pa})/n(^{235}\text{U})$, $A(^{231}\text{Pa})/A(^{235}\text{U})$, are to be measured by participating laboratories using their routine analytical procedures. The date of production of the sample should be reported as follows: dd/mm/yyyy and the associated expanded uncertainty should be reported in \pm days.

The measurement results will be evaluated against the reference value for the production date of the certified test sample. Full confidentiality is guaranteed with respect to the link between measurement results and the participants' identity.

Due to the nature of this comparison only a limited number of samples are available. Samples will be allocated to participants in order of registration until the stock of REIMEP-22 samples is used up.

.../...

The participation fee for REIMEP-22 is **€ 1000 per sample** (including sample dispatch), which has to be paid upon reception of the sample.

The REIMEP-22 samples will be shipped from the EC-JRC-IRMM, Geel to the participants. Each participant has to request the Import Licence in time to enable shipment. The handling or operation licence will be organized by the IRMM Transport officers.

We ask each participant to provide the following information:

- 1) Contact person (full name, e-mail address and telephone number)
- 2) Contact person for nuclear transport licensing
- 3) Contact person for dangerous goods
- 4) Nuclear accountancy area
- 5) Delivery address (not a PO box, but a real address)

By registering in REIMEP-22, the participants agree to the following *Transfer of Title and Risks*: "Title and risks associated with the samples provided by IRMM shall pass to the participants upon delivery of the samples to their premises. Participants will be responsible as well for "the sample disposal and costs involved".

Please register electronically for this interlaboratory comparison using the following links:

- To register for the comparison on a 20 mg uranium sample (spectrometric techniques):

<https://web.jrc.ec.europa.eu/ilcRegistrationWeb/registration/registration.do?selComparison=1121>

- To register for the comparison on a 50 mg uranium sample (radiometric techniques):

<https://web.jrc.ec.europa.eu/ilcRegistrationWeb/registration/registration.do?selComparison=1122>

Participating laboratories willing to use the two kinds of techniques can ask for a 20 mg and a 50 mg U sample and will have then to report results for two distinct samples. Note that in this case, the participants will have to register for two samples (using the two links above) and consequently will have to pay for two distinct participations in REIMEP-22.

Once you will have submitted your registration electronically, please follow the procedure indicated: a) print your registration form; b) sign it; and c) fax or email it to us. Your fax/email will be then the confirmation of your participation.

The deadline for registration is 1st October 2013. After this deadline, the participants in REIMEP-22 will be contacted by the IRMM transport officer regarding shipment and transport. The samples will be sent to participants between October and December 2013.

The deadline for submission of results is 31st March 2014.

Please do not hesitate to contact us in case you need more information.

Yours sincerely,



Célia Venchiarutti
REIMEP-22 Co-ordinator



Stephan Richter
REIMEP-22 Co-ordinator