Metrological Laboratory of Radioactive Materials
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Review of activity of the RC Radionuclide Metrology (1999-2001)

Contribution to the 16th meeting of Section II of CCRI

TDCR method

- Participation in the ^{89}Sr activity measurement intercomparison organised by BIPM (November 2000). The result of the TDCR method was confirmed by the CIEMAT/NIST method.
- Standardisation of ^{3}H and ^{35}S solutions for analysis of differences of the TDCR and CIEMAT/NIST methods in RC, NPL and LNHB laboratories.
- Elaboration of a new version of the TDCRB-2 computing code for pure β-emitters activity determination taking into account an anisotropy of a triple detector.
- Investigation of a quenching process in LS-cocktails and determination of the ionisation quenching parameter kB.

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4p(LS)-g coincidence and anticoincidence methods

- Elaboration of paralleled LS-system of multiparametric coincidence and anticoincidence methods for radionuclide standardisation radioactive solutions with increased accuracy.
- Participation in the ^{152}Eu activity measurement intercomparison organised by BIPM (March 2000).
- Elaboration of a method of standardisation of radionuclide with a real- and quasi-triple scheme of disintegration.

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Gamma - spectrometry

- Elaboration of the method of radionuclide purity of the ^{188}Re eluate determination.
- Re-calibration of GC1520 and GL1 detectors for radioactive solutions measurements in a standard vial.
- Modernisation of the γ-spectrometer system for radionuclide purity control by applying of the Canberra, AccuSpec-A spectrometer with the Genie-2000 computing code.

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International activities

- Participation in the ICRM'99 conference in Prague.
- Co-operation with the LNHB on quenching processes investigation in the LS-detector and in the field of γ-spectrometry.
- Participation in the EUROMET Contact Persons meeting in Oslo (May 2000).
- Standardization of β-emitting nuclides and analyses of the TDCR method based on the 3D-DAQ system (KRISS, Republic of Korea, 1999)
- Investigation of quenching processes in LS-detectors during a scientific visit to the NPL and LNHB laboratories (September 2000).
- Participation in the EUROMET Contact Persons meeting in Bratislava (February 2001).

Laboratory services

- Supplying of about 40 first-order standard solutions to different customers (2000).
- Quality control of the RC products and activity measurements in relation to the National Standard of Radionuclide Activity Unit.

PUBLICATIONS

P. Cassette, R. Broda, D.Hainois, T.Terlikowska (2000). Analysis of detection-efficiency variation techniques for the implementation of the TDCR method in liquid scintillation counting. Appl. Radiat. Isot., Vol. 52, No. 3, pp. 643-648.

T. Terlikowska, D. Hanois, P. Cassette, T. Radoszewski (2000). Application of α/β discrimination in liquid scintillation counting for the purity control of ^{99m}Tc medical solution. Appl. Radiat. Isot., Vol. 52, pp. 627-632.

A. Chylinski, T. Radoszewski, T. Terlikowska-Drozdziel, A. Jeczmieniowski (2000). A multimethodic and multiparametric system for standardisation of radionuclides. Appl. Radiat. Isot., Vol. 52, pp. 663-667.

Chylinski, T. Radoszewski, T. Terlikowska-Drozdziel (1999). New generation of the radionuclide standards. Nukleonika, Vol. 44, No. 4, pp. 595-602.

R. Broda, P. Cassette, K. Maletka, K. Pochwalski (2000). A simple computing program for application of the TDCR method to standardisation of pure-beta emitters. Appl. Radiat. Isot., Vol.52, No.3, pp. 673-678.

R. Broda[1], K. Maletka[1], , T. Terlikowska[1], P. Cassette[2]. Study of the influence of the LS-cocktail composition for the standardisation of radionuclides using the TDCR model. (Submitted for ICRM'2001). ([1]: RC POLATOM, Swierk, [2]: LNHB, Saclay).

A. Chylinski, T. Terlikowska, R. Broda. Multi-method standardisation of radionuclides with triple scheme of disintegration. (Submitted for ICRM'2001).