

**CURIUM-244 ALPHA-SOURCES FOR SPACE STUDY**

**V.M.Radchenko¹, B.M.Andreychikov², G.Venke, V.D.Gavrilov¹,
B.N.Korchuganov², R.Rider³, M.A.Raybinin¹ and T.Ekonomoy⁴**

*¹State Scientific Center Research Institute of Atomic Reactors,
433510, Dimitrovgrad, Russia*

*²Russian Academy of Sciences Institute of Cosmic Study,
117810, Moscow, Russia*

³Max-Planck-Institute of Chemistry, 6500, Mainz, FRG

⁴Chicago University, 60637, Chicago, USA

The unsealed alpha-sources was designed and prepared to furnish "Alpha-PXM" apparatus designed for analysis of Mars rock element composition and atmosphere by method of alpha back scattering, alpha-proton and X-ray fluorescence. The sources were prepared by high-temperature condensation of metal curium vapour on silicon substrates. The sources are silicon discs on which surfaces curium-244 as silicide is fixed. They have the following dimensions: disk of diameter 8 mm, active part of diameter 6 mm and 0.3 mm thickness. The sources activities are 5 ± 1 mCi, alpha energy resolution (5.8 MeV) : 1.7-2.5% FWHM, 2.9-4.5% FWTM. Performed thermovacuum (from -196 to 1000°C), mechanical a resource tests showed the sources hold their characteristics. The sources were shown to be applied for the above mentioned analytical purposes.