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Detection of ultra rare alpha decays of super heavy nuclei

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Three approaches to the measurement of a rare alpha decaying products produced in heavy-ion induced nuclear reactions are described. One is based on a chemical extraction and following deposition of the nuclides under investigation onto the surface of the detector, whereas the second one is associated with long-lived products implanted into silicon detectors by using the electromagnetic separation technique. The third approach relates with an application of real-time mode detection of correlated energy-time-position recoil-alpha sequences from ^{48}Ca induced nuclear reactions with actinide targets, like ^{242}Pu , ^{244}Pu , $^{245,248}\text{Cm}$, ^{239}Am and ^{249}Cf [1-3]. Namely with this technique it has become possible to provide a radical suppression of backgrounds in the full fusion (3-5n) reactions aimed to the synthesis of super heavy elements with $Z=113-116$.

[1] Yu.S.Tsyganov and V.I.Tomin, *Appl.Radiat. and Isotopes*, Vol.49, Nos.1-2, pp.113-115 (1998)

[2] Yu.S.Tsyganov et al. *Nucl.Instrum. and Meth. In Phys. Res.*, A525 (2004)213-216

[3] Yu.Ts.Oganessian et al., *Phys. Rev. C*69 (2004) 02161.

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