

# STANDARD SETS OF NUCLIDES BEING THE MEMBERS OF THE $^{232}\text{Th}$ , $^{235}\text{U}$ , $^{238}\text{U}$ SERIES. THEIR IDENTIFICATION AND USE

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In the paper the sets – an ordered sequence of activities genetically-related nuclides being the members of the  $^{232}\text{Th}$  (and  $^{235}\text{U}$ ,  $^{238}\text{U}$  series) series is considered. The activities in the samples are determined by gamma-spectrometry.

The ordering activity nuclides being the members of the series is determined by a system of differential Bateman-Rubinson equations, by their solutions and the initial conditions. Among many possible initial conditions for the solution of the system, one can take the following conditions for the activity of the parent  $N_M$  and daughter nuclide:  $N_M > 0$ ;  $N_D = 0$ ; at the initial moment of own time  $T_E = 0$ . For all times  $T_E \geq 0$  there are no other sources of the activities of these nuclides. These conditions can be called standard conditions. The set of activities obtained for these conditions will be the standard set of the activities of nuclides. Essentially these conditions coincide with the geochemical conditions of the closed system, which is necessary for correct dating of events.

The calculated time (evolutionar) dependences of nuclides activities will be used as comparison standards. It provides metrology of the experimental standard sets found in the sample.

Occurrence of substance of samples is an occurrence of experimental parent standard sets (nuclides  $^{232}\text{Th}$ ,  $^{235}\text{U}$ , and  $^{238}\text{U}$  series). This fact is considered as an event.

During the existence of the sample and its interaction with the environment there can occur a following event – change its nuclide composition violating the parent standard sets. This event is accompanied by the creation of new experimental daughter standard sets.

Detecting these experimental standard sets in the sample and having comparison standards, we can measure them. The duration of existence of this set will be one of results of the measurement.

Some examples of using the offered method for dating of the samples are represented. Also we compare our results with a well known method of nuclear chronometers.