Contribution ID: **14** Type: **Oral**

Analysis of 234U/238U ratio by ICP-MS

Friday 4 July 2025 12:00 (20 minutes)

$ICP-MS$ method has been used for analyses [1] of the elemental and isotope composition (64 elements) of bones of dinosaurs, South mammoths, prehistoric bear and archanthropus as well as the samples of surrounding soils; everything collected in different parts of Uzbekistan. A high concentration of uranium we detected in the bones of dinosaurs (122mg/kg), South mammoth (220mg/kg), prehistoric bear (24mg/kg) and archanthropus (1.5mg/kg) compared to surrounding soils (3.7-7.8 mg/kg) and standard bones (<0.01mg/kg) was established. The standart ratio $^{235}U/^{238}U = 0.007$ was detected for all samples. It was also observed that the $^{234}U/^{238}U$ ratio (Table) differ from $^{234}U/^{238}U = 5.4 \times 10^{-5}$ secular equilibrium value. In this report the various mechanisms responsible for this difference are discussed.

Table. Data on uranium isotope ratios, detected by $ICP-MS$ with $1-SD$ errors in prehistoric bones, standard bone, and soils collected around these bones.

Sample	$^{234}U/^{238}U \times 10^{-5}$	$^{235}U/^{238}U \times 10^{-3}$
MB1	**16.0±0.6**	**7.4±0.2**
SMB1	**11±1**	**7.5±0.2**
MB2	**9.5±0.2**	**7.5±0.2**
SMB2	**8.4±0.4**	**7.6±0.2**
BA	**8.1±0.2**	**7.2±0.2**
BB	**7.7±0.3**	**7.4±0.2**
DB	**7.1±0.4**	**7.2±0.2**
SDB	**7.2±0.3**	**7.5±0.2**
STB	**7.2±0.5**	**7.5±0.2**
SSTB	**10.6±0.3**	**7.4±0.2**

MB1& & SMB1 –South mammoth bone found in Angren and soil collected near this bone respectively; MB2& SMB2 - South mammoth bone found in Kashkadari and soil collected near this bone respectively; BA-arhantrope bone; BB –bone of bear from Selungur cave; DB& SDB –Dinosaur bone and soil collected near this bone respectively; STB & SSTB –standard bone and soil collected near the standard bone. The natural abundance ratio of the isotopes $^{235}U/^{238}U$ is 0.007257, secular equilibrium ratio $^{234}U/^{238}U$ is 5.4×10^{-5} .

[1] I.N. Izosimov, et al., *Czech Chemical Society Symposium Series*, **20**, 116(2022).

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Session Classification: 8. Nuclear physics methods in application to the study of cultural heritage

Track Classification: Section 8. Nuclear physics methods in application to the study of cultural heritage.