

DEAR management board of TANDEM

Experiment Title Dating of Rocks in the Danube River plane by using AMS
with 26Al and 10Be
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Short presentation of the scientific project

AMS is an outstanding method for determining erosion and dating of rocks and other geological relevant material. Using isotopes as 26Al and 10Be with half lives of 0.7 ma and 1.5ma, respectively that are produced by the cosmogenic radiation , these isotopes can be used as tracers of the history of geologic phenomena in a certain region.
The novel ability to use cosmogenic nuclides to date geomorphologic surfaces, and determine process rates from rock, regolith and soils, has revolutionized and rejuvenated many fields of geomorphology.

The present envisaged research is performed in cooperation with The National Institute of Geology-Geography of the Romanian Academy of Science and will concern measurements of ages for the terraces of the Danube River in order to establish positional evolution during last 2ma and to obtain correlations to the underground water resources. The 1 MV AMS facilities offers best experimental conditions for precise and hyper-sensitive measurements for both isotopes. However, the use of the AMS technique requires several computer codes necessary for the data evaluation and interpretation. Such computer code were already established and tested in other experiments of the same kind that were performed at TU Munich .
The samples for the envisaged experiments were partially collected (26 samples from locations at different locations and different distances from the surface) . For each location both the 16Al and the 10Be content will be determined.

Beam time request(unit=8 hours) : 300
Desired Period : Dec 2013 - April 2014

Desired beam properties

Type : 26Al, 10Be
Energy(MeV) : 2
Intensity(p/nA) : 1
Vacuum Requests : 10-7

Special requirements for detectors, electronics, acquisition system

1 MV tandem accelerator and acquisition system

Minimal information needed for the radiological risk evaluation:

a) Source activity : no
b) Use of open sources :
c) Estimate of the residual activity as a result of irradiation : no
d) Means of storage/transportation for irradiated targets : no

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