

It processes around 250,000 tonnes of household waste every year. The plant in the 9th district produces approximately: 40,000 MWh of electricity; 470,000 MWh of district heating; 6,000 tonnes of scrap iron; 60,000 tonnes of clinker, ash and filter cake. The environmentally friendly heating produced at Spittelau is enough to heat more than 60,000 households in Vienna in a year.

In Belarus this direction of waste utilization is not used, because it is very expensive in terms of construction and operation. One way to involve this very promising for energy sector and environment technology – looking for external investment with state supporting of it.

Komar D.¹, Kutsen S.²

¹ *International Sakharov Environmental Institute of Belarusian State University, Minsk, Republic of Belarus;*

² *Research Institute for Nuclear Problems of Belarusian State University, Minsk, Republic of Belarus*

NEUTRON CAPTURE GAMMA RAY FIELD WITH ENERGY TO 10 MEV FROM RADIONUCLIDE FAST NEUTRON SOURCE

Wide spread and use of technogenic sources of ionizing radiation such as particle accelerators and nuclear reactors leads to appearance of a number of applied metrological tasks aimed at providing spectrometric and dosimetry ionization measurement instruments, located for photon radiation fields with energy to 10 MeV.

Gamma rays with energy higher 3 MeV may be acquired using radiative thermal neutron capture on target, i.e. (n, γ) – nuclear reaction. In range of energies to 7 MeV Titanium is used; to 10 MeV – Nickel. Simplest source of instantaneous Neutron Capture Gamma-Ray should consist of fast neutron source, neutron moderator and target irradiated with thermal neutrons. As a source of gamma-ray with energy to 10 MeV thermal neutron collimator of AT140 Neutron Calibration Facility with ^{238}Pu -Be fast neutron source, may be used (IBN-8-6).

Were built Monte-Carlo models of thermal neutrons collimator, facility and ^{238}Pu -Be fast neutron source using MCNP-4b code. Defined energy distribution of flux density of Neutron Capture Gamma-Ray for Titanium and Nickel targets.

For instrumental support of the experiment at SPE “ATOMTEX” was specifically manufactured Spectrometric Detector BDKG-19M NaI (Tl) 63×160mm with nonlinear channel-energy conversion characteristic in range to 10 MeV. Were acquired results for Ti, Ni, and Fe targets, and without a target for open ^{238}Pu -Be neutron source.

During the experiment possibility to use Neutron Capture Gamma-Ray field formed by thermal neutron collimator of AT140 Neutron Calibration Facility with ^{238}Pu -Be fastneutron source with Ti and Ni targets for calibration NaI (Tl) spectrometers for energy to 10 MeV was confirmed. Closely stationing polyethylene plate in the

channel of collimator provides significant increase in output of reference radiation from target simultaneously decreasing unneeded parts of the spectrum.

To decrease flux of thermal neutrons using borated polyethylene is recommended.

Koroteeva D.

Belarusian State University, Minsk, Republic of Belarus

THE INSECTS – VISITORS OF MALVA ALCEA L. IN BELARUS

Analysing of anthophilous insects communities has a great significance in the process of studying of the symbiotic relationship between pollinators and plants. Anthophilous insects as pollinators play an important role in the pollination and seed reproduction of plants. Pollinators can provide the efficiency of seed production process in many different ways. Studying the species composition of pollinators of any particular plant may help in predicting similar results during studying of another plant from this family or genus.

Malva alcea L. is an introductant in Belarusian flora. Thereby studying of pollinators' community may help in the process of analyzing interspecies communication between different similar to *Malva alcea* L. plants during the process of introduction process of *Malva alcea* L. to our flora.

The collecting of insects was held during July, 2016. Insects were caught on the territory of the botanical garden of biology faculty of BSU, Minsk. Insects were caught one by one in the moment of visiting the inflorescence of *Malva alcea* L., then they were placed in the tubes with alcohol for pollen cargo analysis. The taxonomic identification has been established with the key.

Malva alcea L. is a plant in the mallow family native to southwestern, central and eastern Europe, also it can be found in southwestern Asia. It is a herbaceous plant growing to 125 cm tall. The flowers appear singly in summer to early autumn. They are about 6 cm in diameter, usually with five sepals and five bright pink petals. This plant is the most common in drier soils in thickets, along paths, in waste places. *Malva alcea* L. can make natural hybrids with the closely related *Malva moschata* L. In central Europe it can grow at altitudes of up to 2,000 m.

We found 5 species of Hymenoptera – visitors of inflorescences of malva, which are listed in the following diagram:

Family	Genus	Species
Apidae	Bombus	<i>Bombus terrestris</i> L.
		<i>Bombus hypnorum</i> L.
		<i>Bombus lapidarius</i> L.
Anthophoridae	Tetralonia	<i>Tetralonia macroglossa</i> Rossi
Halictidae	Halictoides	<i>Halictoides dentiventris</i> Nylander