



26th INTERNATIONAL CONFERENCE
ON ATOMIC COLLISIONS IN SOLIDS
(ICACS-26)

13-18 July 2014
Debrecen, Hungary

PROGRAMME
AND
BOOK OF ABSTRACTS



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26th INTERNATIONAL CONFERENCE ON ATOMIC COLLISIONS IN SOLIDS

13 – 18 JULY, 2014

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evaporation from the $^{210}\text{Rn}^*$ CN. Some examples are shown in Figure 1. The derived ranges of Rn atoms will be compared with similar data obtained earlier and be discussed.

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Development of collisional data-base for elementary processes of electron scattering by atoms and molecules

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Elementary processes of electron collisions with atomic particles (single atoms and molecules in gas phase) have been a focus of interest in Laboratory studies for a long time. Measurements of differential cross sections for elastic scattering and excitations have been performed on the variety of atomic targets in the wide range of electron impact energies and scattering angles. The idea is to put all these collected data in the form of database which would be compatible with the RADAM (Radiation DAMage) databases [1], as well as with the protocols of VAMDC (Virtual Atomic and Molecular Data Centre) [2]. The current progress will be presented at the conference.



Figure 1. A screen shot of eMol Database at Belgrade server station.

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Charge state distributions for heavy ions of evaporation residues produced in complete fusion reactions

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Charge state distributions of heavy ions passed through a solid media have been under study for a long time. The charge state of an energetic ion moving through a matter is mainly determined by the balance between capture of electron(s) from media atoms and loss of electron(s) by the ion. Complications in the description of charge-exchange processes are connected with the effect of multi-electron losses, the appearance of meta-stable excited states, Auger and radiative transitions in the excited multi-electron system of the moving ion. Complexity of charge-exchange processes is doubled when we consider the charge state distribution of heavy evaporation residues (ER) produced in nuclear reactions. Excited nuclear states strongly affect the ionization of inner atomic shells due to the conversion of nuclear transitions in ER. The vacancies formed by the conversion of the inner shells of the ionized atoms of ER lead to Auger cascades which significantly increase the ion charge states over the expected equilibrium value.

New data on the charge state distributions for ER produced in complete fusion reactions studied at LNL with an electrostatic deflector will be presented, compared with available data obtained earlier and will be discussed in the present work. Some examples are shown in Figure 1.