

High Energy Nuclear Data Evaluations for Neutron-, Proton-, And Photon-Induced Reactions at KAERI

Young-Ouk Lee, Jonghwa Chang, Doohwan Kim, Jeong-Yeon Lee
Korea Atomic Energy Research Institute
P.O. Box 105 Yusong, Taejon 305-600, Korea

Yinlu Han
China Institute of Atomic Energy, China

Efrem Sh. Sukhovitski
Radiation Physics and Chemistry Problems Institute
220109, Minsk-Sosny, Belarus

The Korea Atomic Energy Research Institute (KAERI) is building high energy neutron-, proton-, and photon-induced nuclear data libraries for energies up to hundreds MeV in response to nuclear data needs from various R&Ds and applications. The libraries provide nuclear data needed for the accelerator-driven transmutation of nuclear waste and radiation transport simulations of cancer radiotherapy. The neutron library currently has 10 isotopes such as C-12, N-14, O-16, Al-27, Si-28, Ca-40, Fe-56, Ni-58, Zr-90, Sn-120, and Pb-208 for energies from 20 up to 400 MeV. The proton nuclear data were evaluated in a consistent manner with the neutron case, using the same nuclear model parameters. In addition to the same isotopes included in the neutron library, proton library has extra 70 isotopes of 24 elements ranging from nitrogen to lead up to 150 MeV for which the evaluations are focused on the medical and activation analyses applications. The photonuclear data library has been built along with international collaboration by participating in the IAEA's Coordinated Research Project (CRP) ended last year. Currently the KAERI photonuclear library includes 143 isotopes of 39 elements.