Memo CP-D/587

Date: 18 September 2009
To: Distribution
From: N. Otsuka, O. Schwerer, S. Taova, S. Dunaeva

Subject: **LEXFOR entry "Partial Reactions" and "Secondary Particles"**

The following updates of LEXFOR entry "Partial Reactions" are proposed in order to
  (1a) describe partial reaction defined by outgoing particle energy as a secondary energy;
  (1b) describe difference of level energy and excitation energy (though their boundary is not sharp;
  (1c) delete one sentence about excitation function which is also possible for sum of partial reaction;
  (2) put an example of partial reaction in the explanation of `EN-SEC`;
  (3) clarify when EN-SEC must be coded.

(1) Proposed deletion (strike line) and addition (underline) to LEXFOR "Partial Reactions"

   ….

Definition: A partial reaction, as defined for EXFOR, is a reaction leading to or proceeding through a specific level or emitting a specific gamma or particle group, and excludes isomeric states (see **Isomeric States**). ~~An *excitation function* is the energy dependence of a partial reaction cross section leading to the excitation of a discrete level or to the production of a particular radiation or particle group.~~

REACTION Coding: `PAR` in SF5 (Branch)
Example: `(…(N,INL)…,PAR,SIG)`

The energy must be given in the COMMON or DATA section under a secondary-energy data heading (Family E), *e.g.*, `E-EXC, E-LVL, E`.

Partial reactions leaving the residual nucleus (reaction product) in an excited state.
The excited state is defined by specifying one, several or a range of:

• level energies (default is level energy of reaction product in discrete level)

• excitation energies (default is excitation energy of reaction product in broad or continuum level)

…

(2) Proposed correction (underline) to LEXFOR "Partial Reactions"

…
When the data is a function of the secondary energy of more than one secondary particle, the secondary energies for the particles must be defined under the information-identifier keyword `EN-SEC` (see EXFOR Exchange Formats Manual Chapter 7: EN-SEC and **Secondary Particles**).
Example: `REACTION (8-O-16(6-C-12,INL)8-O-16,PAR,DA)`
`       EN-SEC   (E-LVL1,6-C-12)`
`                (E-LVL2,8-O-16)`

(3) Proposed deletion (strike line) correction (underline) to LEXFOR "Secondary Particles"

2. **The information-identifier keyword EN-SEC** may be used:

• to specify to which reaction product the secondary energy given in the COMMON or DATA section refers. (See EXFOR Exchange Formats Manual Chapter 7: EN-SEC). This keyword must always be coded when ~~the data heading E1, E2, etc., are used~~. it is not evident to which reaction product the secondary energy refers, e.g. because more than one particle is specified in SF3 and/or SF7, or when the data is a function of the secondary energy of more than one secondary particle.

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