CIELO U-235

Date: 3 February 2014

Place: Phone conference Time: 16:00 (Paris, GMT+1), 8:00 (Los Alamos, GMT-7)

Participants: BNL: M.Herman, D.Brown CEA: G.Noguère (DEN), P.Romain and E.Bauge (DAM) LANL: M.Chadwick, A.Kahler ORNL: L.Leal IAEA: R.Capote Noy NEA: E.Dupont

The objective of this phone conference is to share progress and plans on the ²³⁵U evaluation for the CIELO pilot project. A short-term milestone is to have a starter file by May 2014.

M.Chadwick opened the discussion and proposed to hear progress in the resonance region and in the continuum region from L.Leal and P.Romain, respectively.

Resonance region

L.Leal reminded participants of the issues identified by WPEC Subgroup 29 in the keV energy region for the ²³⁵U(n,g) cross section. The re-evaluation work in the resolved resonance region (RRR, up to 2.25 keV) was initiated to solve this problem. The new analysis includes recent data measured at RPI (capture and fission) and at LANL (capture) up to a few keV (but data at higher energy were also measured). The preliminary integral validation results are encouraging when the new resonance parameters are included in JENDL-4.0 (but the results are not as good when using ENDF/B-VII.1). This work was summarised in the presentation he gave at the NEMEA/CIELO workshop in November 2013¹. The new resolved resonance parameter set is now almost ready for released, but L.Leal suggested updating the unresolved resonance region (URR, up to 25 keV) before repeating the integral validation.

G.Noguère reported that the new URR evaluation that was presented at the NEMEA/CIELO workshop is available for testing.

It was agreed that L.Leal and G.Noguère will finalise a complete MF2 file (RRR+URR) and will perform a few integral tests before releasing the new parameters for additional validation.

Continuum region

P.Romain reported on preliminary results he obtained when trying to better reproduce the standard 235 U(n,f) cross section (see Appendix). The objective of this work is to keep the overall consistency of the evaluation when replacing the calculated values by the standard ones. Of course, the change in the fission cross section affects the other channels and there is still work to be done, e.g. to get closer to the JENDL-4.0 capture cross section below 100 keV. E.Bauge inquired about the necessity to adopt standards data in the evaluated files.

R.Capote and M.Chadwick answered that it is certainly a good strategy to try to reproduce the standard values as closely as possible.

¹<u>www.oecd-nea.org/science/wpec/nemea7/presentations.html</u>

M.Chadwick asked about the deficiency in the modelling of the capture cross section. P.Romain answered that additional coupled channels are probably required in OM calculations. R.Capote commented that this point will be further discussed in March with T.Kawano when they will be visiting P.Romain at Bruyères (in conjunction with the ESNT workshop at CEA Saclay²).

R.Capote stressed the importance of the RPI scattering experiments on ²³⁸U to guide the evaluation of the elastic and inelastic cross sections and recommended to perform a similar measurement with ²³⁵U. E.Dupont reported that they need to check if they have tens of grams available in their inventory for this experiment. M.Chadwick agreed to see if anything can be done to help.

Starter file – Integral validation

It was suggested not to use any new prompt fission neutron data (nu-bar, PFNS) for the moment and to include the new MF2 resonance parameters from ORNL-CEA in the existing files (e.g. JEFF-3.2, ENDF/B-VII.1, JENDL-4.0) in order to start the integral validation and to disentangle effects from the resonance and continuum regions.

Adjourn

² <u>http://esnt.cea.fr/Phocea/Page/index.php?id=37</u>

