Corrigendum

J. VOIGNIER, S. JOLY, and G. GRENIER, "Capture Cross Sections and Gamma-Ray Spectra from the Interaction of 0.5- to 3.0-MeV Neutrons with Nuclei in the Mass Range $A = 63$ to 209," *Nucl. Sci. Eng.*, **93**, 43 (1986).

Recently, a disagreement was discovered between the total capture cross sections as they are given in Table VI and the values that can be deduced from the energy spectra obtained at $E_n = 0.5$ MeV and presented in Figs. 1 through 4.

Then we found that the derivation of Eq. (4) was incorrect. When using the principle of energy conservation to deduce the number of capture reactions R having occurred in the sample, we have

$$R = \frac{1}{E_M} \int_0^{E_M} E_\gamma S(E_\gamma)\, dE_\gamma \ .$$

Assuming isotropy of capture gamma rays, the total capture cross section is given by Eq. (6):

$$\sigma = 4\pi \frac{R}{N\varphi}$$

$$\sigma = \frac{4\pi}{N\varphi} \cdot \frac{1}{E_M} \int_0^{E_M} E_\gamma S(E_\gamma)\, dE_\gamma$$

$$\sigma = \frac{1}{E_M} \int_0^{E_M} E_\gamma \sigma(E_\gamma)\, dE_\gamma \ ,$$

where

$$\sigma(E_\gamma) = \frac{d\sigma}{dE_\gamma} = \frac{4\pi}{N\varphi} S(E_\gamma) \ .$$

Relaxing over isotropy of capture gamma rays, the double differential capture cross section is readily obtained as follows:

$$\frac{d^2\sigma}{dE_\gamma\, d\Omega} = \frac{S(E_\gamma)}{N\varphi} \ .$$

Consequently, the published capture spectra have to be multiplied by the factor $\langle M \rangle$, which was erroneously introduced in Eq. (4). This factor is given in Table I of this corrigendum for each of the 24 spectra.

We are very grateful to Donald and Maureen Gardner of the Lawrence Livermore National Laboratory for pointing out the discrepancy between total capture cross sections and capture gamma-ray spectra.

Note that the numerical spectral results sent to the European Nuclear Energy Agency at Saclay will be corrected accordingly.

TABLE I

Multiplicative Factor for the Energy Distributions of Capture Gamma Rays

Element	Factor	Element	Factor	Element	Factor
^{nat}Cu	3.19	^{156}Gd	3.94	^{184}W	3.85
^{63}Cu	3.46	^{157}Gd	4.45	^{186}W	3.88
^{65}Cu	3.40	^{158}Gd	3.82	^{139}La	3.50
^{89}Y	3.58	^{160}Gd	3.60	^{159}Tb	3.80
^{nat}Zr	3.59	^{181}Ta	3.84	^{nat}Re	3.60
^{93}Nb	3.93	^{nat}W	3.69	^{nat}Pt	4.02
^{nat}Gd	4.10	^{182}W	3.86	^{nat}Tl	3.15
^{155}Gd	4.69	^{183}W	4.29	^{209}Bi	3.58