Found Chem (2018) 20:29–30
https://doi.org/10.1007/s10698-017-9296-1

ERRATUM

Erratum to: Valencies of the lanthanides

David A. Johnson[2] · **Peter G. Nelson**[1]

Published online: 16 September 2017

Erratum to: Found Chem DOI 10.1007/s10698-017-9291-6

The authors regret that there are errors in equation (6) and subsequent discussion. The correct version is as follows:

$$i = L\left[-\bar{E}_{\mathrm{f}} + (\Delta_{\mathrm{i}}p)\bar{E}_{\mathrm{p}} - (\Delta_{\mathrm{i}}q)\bar{E}_{\mathrm{q}} + (\Delta_{\mathrm{i}}c_3)\bar{E}^3\right] + (5/2)RT \quad (6)$$

The values of $\Delta_{\mathrm{i}}p$, $-\Delta_{\mathrm{i}}q$, and $\Delta_{\mathrm{i}}c_3$ are given in Table 4. The second of these determines the loss of exchange energy and peaks at f^7.

The online version of the original article can be found under doi:10.1007/s10698-017-9291-6.

✉ Peter G. Nelson
p.g.nelson@hull.ac.uk

[1] Department of Chemistry, University of Hull, Hull HU6 7RX, UK

[2] Department of Chemistry, The Open University, Milton Keynes MK7 6AA, UK

Table 4 Values of the coefficients in Eq. (6)

Process	$\Delta_i p$	$-\Delta_i q$	$\Delta_i c_3$
$f^1 \rightarrow f^0$	0	0	0
$f^2 \rightarrow f^1$	−1	1	+9
$f^3 \rightarrow f^2$	−2	2	+12
$f^4 \rightarrow f^3$	−3	3	0
$f^5 \rightarrow f^4$	−4	4	−12
$f^6 \rightarrow f^5$	−5	5	−9
$f^7 \rightarrow f^6$	−6	6	0
$f^8 \rightarrow f^7$	−7	0	0
$f^9 \rightarrow f^8$	−8	1	+9
$f^{10} \rightarrow f^9$	−9	2	+12
$f^{11} \rightarrow f^{10}$	−10	3	0
$f^{12} \rightarrow f^{11}$	−11	4	−12
$f^{13} \rightarrow f^{12}$	−12	5	−9
$f^{14} \rightarrow f^{13}$	−13	6	0

As with the tetrad effect, the irregularities in $\Delta_i c_3$ centred on the quarter- and the three-quarter-full shell are associated with the ability of electrons to keep apart better if their m_l values have the same sign rather than opposite. This eases the general increase in inter-electronic repulsion in the first quarter of the series, where electrons have m_l values of the same sign, relative to the second quarter, where they have both positive and negative values (Table 2). On ionization, this easement is lost in the first quarter and gained in the second (Table 4); similarly in the third quarter over the fourth quarter.