

CORRIGENDA

F. Rotzinger 800–811

The Water-Exchange Mechanism of the $[\text{UO}_2(\text{OH}_2)_5]^{2+}$ Ion Revisited: The Importance of a Proper Treatment of Electron Correlation

Chem. Eur. J., **2007**, *13*

DOI: 10.1002/chem.200501472

In the paper by Rotzinger in *Chem. Eur. J.* **2007**, *13*, 800–811, the energies for the A mechanism in Table 6, computed at the CAS/SCF(12/11)PCM geometries/frequencies and MCQDPT2(12/11)PCM energies level, are 5.42 kJ mol^{-1} too high because of an error in the MCQDPT2(12/11) calculation on the reactant $[\text{UO}_2(\text{OH}_2)_5]^{2+}$, which was performed with seven 1s oxygen molecular orbitals as frozen cores instead of eight. This error does not affect the conclusions. The corrected values in Table 6 are italicized. The author apologizes for this error.

Table 6. Experimental and computed thermodynamic activation parameters.^[a]

Mechanism	ΔE^\ddagger (ΔE)	ΔH^\ddagger (ΔH)	ΔS^\ddagger (ΔS)	ΔG^\ddagger (ΔG)	$\Delta V_{\text{cav}}^\ddagger$ (ΔV_{cav})
experimental data ^[b]		26	−40	38	
CAS-SCF(12/11)-SCRF geometries/frequencies, and MCQDPT2(12/11)-PCM energies ^[c,d]					
D	50.1 (44.3)	48.4 (46.2)	2.7 (11.4)	47.6 (42.8)	6.9 (8.7)
D	49.6 (45.2 ^[e])	48.2 ^[e] (47.3 ^[e])	−0.3 ^[e] (8.3 ^[e])	48.3 ^[e] (44.9 ^[e])	6.3 ^[e] (8.2 ^[e])
A	31.3 (29.5)	27.2 (27.7)	−17.7 (−0.4)	32.4 (27.8)	−4.1 (−3.6)
A	27.9 (26.9 ^[e])	23.6 ^[e] (25.0 ^[e])	−11.6 ^[e] (7.7 ^[e])	27.0 ^[e] (22.7 ^[e])	−3.9 ^[e] (−3.7 ^[e])
CAS-SCF(12/11)-PCM geometries/frequencies, and MCQDPT2(12/11)-PCM energies ^[c,d]					
D	52.6 (47.9)	50.0 (48.7)	−24.0 (−14.9)	57.1 (53.2)	3.1 (3.6)
D	55.3 ^[f] (48.4 ^[f])	52.7 ^[f] (49.2 ^[f])		59.8 ^[f] (53.7 ^[f])	
A	25.6 (20.5)	22.9 (20.2)	−23.4 (−2.4)	29.9 (20.9)	−2.4 (−2.9)
A	29.6 ^[f] (25.5 ^[f])	27.0 ^[f] (25.2 ^[f])		33.9 ^[f] (25.9 ^[f])	
HF-CPCM geometries/MP2-CPCM energies ^[c,g]					
D	59.2 (54.5)	^[h]	^[h]	^[h]	4.9 (3.6)
A	18.7 (15.8)	^[h]	^[h]	^[h]	−3.0 (−3.4)
CPDM geometries/CPMD energies ^[c,i]					
D				45.2 (36.4) ^[j]	
A				28.0 (26.8) ^[j]	

[a] Units: energies: kJ mol^{-1} , entropy: JK^{-1} , volume: $\text{cm}^3 \text{mol}^{-1}$. [b] From reference [1]. [c] In parenthesis: parameters for the corresponding intermediate. [d] This work. [e] 6-31G(d,p) basis set for H_2O . [f] Corrected for the BSSE. [g] From reference [5]. [h] The vibrational frequencies were not computed. [i] From reference [10]. [j] ΔA^\ddagger (ΔA), Helmholtz free energy at 27 °C.