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ERRATUM

Erratum to: Photochemistry of Ions at D-region Altitudes of the Ionosphere: A Review

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The effective photoelectron ionization cross sections of the formation of N_2^+ and N^+ ions from N_2 found from the ratios of photoelectron impact ionization to direct photoionization for N_2^+ and N^+ ions (Solomon and Qian 2005) were considered in the early version of the review by Pavlov (2014). In Table 1 of the review by Pavlov (2014), these effective photoelectron ionization cross sections were presented instead of the average photoionization cross sections of the formation of N_2^+ and N^+ ions from N_2 whose values taken from Solomon and Qian (2005) are given here in Table 1.

The review by Pavlov (2014) contains a typographic error in the total rate coefficient, K_{tot}, of the $ONOO^- + O_3 \rightarrow O_3^- + NO + O_2$ and $ONOO^- + O_3 \rightarrow NO_2^- + 2O_2$ reactions [reactions 100 and 101 of Table 10 given by Pavlov (2014)]. The correct value of K_{tot} is equal to 7.5×10^{-10} $(300/T_n)^{1.16}$ cm^3 s^{-1} where T_n is the neutral temperature expressed in Kelvins. This rate coefficient was measured by Viggiano et al. (2006) at 200 and 300 K temperature, and it was assumed by Pavlov (2014) that the temperature dependence of K_{tot} follows a power law. Over 87 % of the $ONOO^- + O_3$ reaction proceeded by producing $O_3^- + NO + O_2$, and the amount of NO_2^- and $2O_2$ was less than 13 % of the products (Viggiano et al. 2006).

Author correction belated.

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Table 1 The average photoionization cross sections of the formation of N_2^+ and N^+ ions from N_2 in the wavelength range, λ_j (Solomon and Qian 2005)

j	λ_j (nm)	σ_{in} (λ_j) (10^{-18} cm^2)	
		N_2^+	N^+
1	0.05–0.4	1.000×10^{-4}	2.400×10^{-3}
2	0.4–0.8	8.040×10^{-4}	1.930×10^{-2}
3	0.8–1.8	5.636×10^{-3}	0.1353
4	1.8–3.2	4.548×10^{-2}	1.092
5	3.2–7.0	0.2480	9.754×10^{-2}
6	7.0–15.5	1.147	0.3803
7	15.5–22.4	3.799	1.287
8	22.4–29.0	7.493	2.445
9	29.0–32.0	10.66	1.092
10	32.0–54.0	19.57	9.826×10^{-2}
11	54.0–65.0	23.09	0.000
12	65.0–79.8	15.64	0.000
13	65.0–79.8	23.39	0.000

The $O^- + O \rightarrow O_2 + e$, $O_2^- + O \rightarrow O_3 + e$, and $O_2^- + O \rightarrow O^- + O_2$ reaction rate coefficients measured by Belostotsky et al. (2005) (first reaction) and Poutsma et al. (2006) (second and third reactions) at room temperature were recommended by Pavlov (2014) for ionospheric studies. Published temperature dependences of these rate coefficients were not reviewed by Pavlov (2014).

The $O^- + O \rightarrow O_2 + e$ reaction rate coefficient was measured by Ard et al. (2013) in the temperature range of 173–500 K, and the temperature dependence of this rate coefficient was approximated by Ard et al. (2013) as 1.5×10^{-10} $(300/T_n)^{1.3}$ cm^3 s^{-1}. If the temperature is changed from 173 to 400 K, then the measured total rate coefficient of the $O_2^- + O \rightarrow O_3 + e$ and $O_2^- + O \rightarrow O^- + O_2$ reactions can be approximated as 1.7×10^{-10} $(300/T_n)^{1.8}$ cm^3 s^{-1} (Ard et al. 2013). Branching ratios for this reaction were determined to be less than 55 % for the $O_3 + e$ channel and larger than 45 % for the $O^- + O_2$ channel at room temperature (Poutsma et al. 2006). For definiteness, these branching ratios were taken to be equal to 55 and 45 % by Pavlov (2014), respectively. On the other hand, the equal branching ratios are recommended by Albritton (1978) for this reaction, and this approach results in the rate coefficient of 8.5×10^{-11} $(300/T_n)^{1.8}$ cm^3 s^{-1} for each of the $O_2^- + O \rightarrow O_3 + e$ and $O_2^- + O \rightarrow O^- + O_2$ reactions.

The reactions of O^- and O_2^- with N were not discussed by Pavlov (2014). The $O^- + N \rightarrow NO + e$ reaction rate coefficient was measured by Ard et al. (2013) in the temperature range of 173–500 K, and the temperature dependence approximation of this rate coefficient was given by Ard et al. (2013) as 1.7×10^{-10} $(300/T_n)^{0.6}$ cm^3 s^{-1}. The $O_2^- + N$ total reaction rate coefficient measured in the temperature range from 173 to 400 K was represented by Ard et al. (2013) as 3.1×10^{-10} $(300/T_n)^{1.7}$ cm^3 s^{-1}. The resulting product distribution for this reaction was found to be larger than 85 % for the $NO + O^-$ channel and less than 15 % for the $NO_2 + e$ channel (Ard et al. 2013).

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