Erratum to "Absorption of light by soot particles in micro-droplets of water" (JQS&RT 63(1999), 321)

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There is an error in Eq. (48) of our paper previously published in JQS&RT [1]. This equation must read

$$\int_0^{2\pi} \mathbf{N}_n^2 d\Omega = \frac{2\pi n^2(n+1)^2}{2n+1} \left\{ n(n+1) \left[\frac{j_n(k_1 r)}{k_1 r} \right]^2 + \left[\frac{j_n(k_1 r)}{k_1 r} + j_n'(k_1 r) \right]^2 \right\} \ . \quad (1)$$

The factor $n(n+1)$ was omitted in the respective formula in Ref. [1]. This fact will also change formula (30) in Ref. [1] which must have the form

$$G = \frac{D}{2(k_1 R_d)^D} \sum_{n=1}^{\infty} (2n+1) \left\{ |c_n|^2 I_n(1) + |d_n|^2 \left[\frac{5-D}{2} x_1^{D-2} j_n^2(x_1) + \right. \right.$$
$$\left. \left. x_1^{D-1} j_n'(x_1) j_n(x_1) + I_n(1) + \frac{(4-D)(3-D)}{2} I_n(3) \right] \right\}, \quad (2)$$

where

$$I_n(\alpha) = \int_0^{x_1} x^{D-\alpha} j_n^2(x) dx \ . \quad (3)$$

Note that in the correct expression the pre-factor of $I_n(3)$ does not depend on n and vanishes in the case $D = 3$. This simplifies numerical calculations in the case of non-fractal geometry ($D = 3$), since the integral $I_n(1)$ can be calculated analytically in this case.

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We have verified that these corrections do not affect our numerical results as they concern only with the terms proportional to $|d_n|^2$. These coefficients, unlike $|c_n|^2$, do not have strong resonances (see Fig. 2 in Ref. [1]) and do not contribute significantly to the enhancement factor G.

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References

[1] V. A. Markel and V. M. Shalaev, "Absorption of light by soot particles in micro-droplets of water," J. Quant. Spectrosc. Radiat. Transfer **63,** 321–339 (1999).