A&A 411, 481–482 (2003)
DOI: 10.1051/0004-6361:20031571

Astronomy & Astrophysics

Erratum

Extinction calculations of multi-sphere polycrystalline graphitic clusters

A comparison with the 2175 Å peak and between a rigorous solution and discrete-dipole approximations

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A&A, 386, 296-307 (2002), DOI: 10.1051/0004-6361:20020125

Key words. errata, addenda – dust models – dust, extinction – interstellar: grains – interplanetary medium – scattering

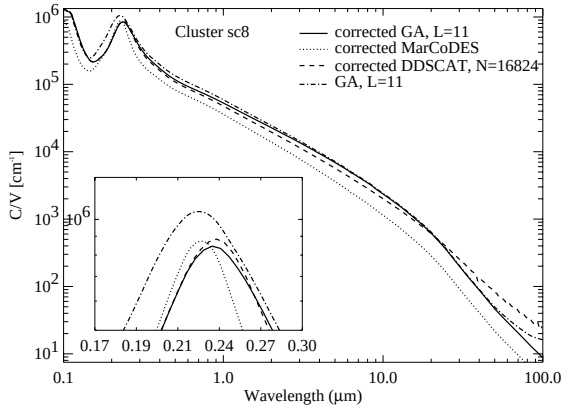

Fig. 1. A comparison of the solutions from the GA, MarCoDES and DDSCAT calculations for the extinction cross section of the simple cubic cluster containing 8 polycrystalline graphitic particles. The GA solution is within 1% of the exact solution at $L = 11$ for the shown wavelength range. In the DDSCAT calculation 16 824 dipoles were used. The particle radius was 10 nm. Also shown is the original GA calculation.

Due to a publishing error Fig. 5 of our paper (Andersen et al. 2002) was shown twice, so that Fig. 6 was missing. The missing figure is reproduced as Fig. 1 of this Erratum.

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Table 1. Peak position and full width at half maximum ($FWHM$) of different clusters, as calculated with the GA method. The value of L indicates at which polar order the GA calculations were truncated.

cluster name	L	peak [μm^{-1}]	$FWHM$ [μm^{-1}]
frac7	11	4.36	1.04
frac49	6	4.36	1.15
frac343	2	4.26	1.01
sphere	3	4.46	0.97
fcc4	11	4.27	0.99
fcc32	7	3.90	1.09
fcc 49	6	3.63	1.31
fcc108	3	3.82	1.58
sc8	11	4.25	1.41
sc27	7	3.96	1.27

In addition an incorrect value of the real dielectric function of graphite was used in our computations, since we overlooked that the tabulation of Draine (2002) gives Re(eps-1) and not Re(eps). This oversight has negligible influence on the computed extinction in the infrared and most of the visible spectral region. However the extinction peak around 2200 Å is shifted $\approx 0.15\,\mu$m^{-1} toward longer wavelengths and diminished somewhat in intensity, when the correct input data were used.

The corrected peak positions and widths are given in Table 1 below, which replaces Table 2 in the original paper. It is seen that our results are now in better agreement with those of Rouleau et al. (1997). The corrected rigorous solution (Gérardy & Ausloos 1982; GA) and the two different discrete-dipole approximation methods – DDSCAT (Draine & Flatau 1994) and MarCoDES (Markel 1998) – are shown in Fig. 1 together with the initial GA computations as an illustration of the difference. The main conclusions in our paper are not affected by these differences.

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