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Corrigendum: The local-field factor and microscopic cascading: a self-consistent method applied to confined systems of molecules


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The term defined as the direct field should not be included in the paper because $\sum_{j\neq i} E_{j\rightarrow i}$ includes the contributions from $E_{\text{dir}}$, which is an artefact of a macroscopic treatment of the local field. This does not affect the main conclusions to this paper by which cascading can be enhanced through geometric means, but it does change the numerical results of the C60 lattice approximation shown in figure 4.

Because of this error, the following corrections should be made to the paper: (1) $E_{\text{dir}} = 0$ in equation (3), where the $f_{i\rightarrow j}$ term used to parameterize this field should also be set to zero. Thus, equations (5), (6), (9), (10), (11), and (17) need to be amended by taking $f_{i\rightarrow j} = 0$. Likewise, $g_i = f_i^{(N-1)}$ at the bottom of page 4. (2) The discussion in the last paragraph of section 2 should now state that all contributions to microscopic cascading are included in $f_i^{(N-1)}$. (3) Figure 4 should now become the figure that is presented in this corrigendum, where we have also made the caption less ambiguous by stating the cross-section of the top hat beam.

The conclusion states that the self-consistent method gives factors that are different from what could be obtained by Bloembergen’s method. In fact, Bloembergen’s approach gives the same solution to the effective polarizabilities as the self-consistent approach provided that the power series representation is equivalent.

Figure 4. The fraction of the effective fifth-order susceptibility over the undressed fifth-order susceptibility as a function of the separation distance between molecular centres illuminated by a top hat beam with an $81 \times 81$ molecule cross-section. The inset shows the calculated $\chi_{eff}^{(5)}$ as a function of the separation distance on a log–log scale. The dashed line in the inset illustrates the undressed value, which is a linear function of concentration.

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