F. Borghese, P. Denti, and R. Saija
Scattering from model nonspherical particles, 2nd edition, Springer, Berlin, 2007
Errata as of October 2, 2007

(page 14, equation (1.25)) Insert a factor i in front of the determinant so that the equation reads

$$\boldsymbol{A}\times\boldsymbol{B} = \mathrm{i}\sum_{\mu\mu'}(-)^{\mu+\mu'}A_{-\mu}B_{-\mu'}S(\mu-\mu')\boldsymbol{\xi}_{\mu+\mu'} = \mathrm{i}\begin{vmatrix}\boldsymbol{\xi}_1 & \boldsymbol{\xi}_0 & \boldsymbol{\xi}_{-1}\\ A_1 & A_0 & A_{-1}\\ B_1 & B_0 & B_{-1}\end{vmatrix}$$

(page 40, line 13 from top) Change the words "recorded by the detector" into "estinguished by the particle"

(page 55, line 4 from bottom) Change "Sect. 2.7" into "section (2.7)"

(page 68, first unnumbered equation) The symbol Re should be omitted as the integrand is already real. Therefore, the equation reads

$$\boldsymbol{F}_{\mathrm{Rad}} = -\frac{1}{4}r^2\frac{1}{4\pi}\int_{\Omega}\left(|\boldsymbol{E}_{\mathrm{I}}+\boldsymbol{E}_{\mathrm{S}}|^2+|\boldsymbol{B}_{\mathrm{I}}+\boldsymbol{B}_{\mathrm{S}}|^2\right)\hat{\boldsymbol{r}}\,\mathrm{d}\Omega\ .$$

(page 68, second unnumbered equation) The right hand side of this equation should be

$$\ldots = |\boldsymbol{E}_{\mathrm{I}}|^2+|\boldsymbol{E}_{\mathrm{S}}|^2+2\mathrm{Re}(\boldsymbol{E}_{\mathrm{I}}\cdot\boldsymbol{E}_{\mathrm{S}}^*)+|\boldsymbol{B}_{\mathrm{I}}|^2+|\boldsymbol{B}_{\mathrm{S}}|^2+2\mathrm{Re}(\boldsymbol{B}_{\mathrm{I}}\cdot\boldsymbol{B}_{\mathrm{S}}^*)\ .$$

(page 68, line 9 from top) Change "cross Sect. 2.7" into "cross section (2.7)"

(page 68, line 14 from top) Delete the words "flux of the"

(page 74, line 1 from top) Change "We assume that" into "According to Sect. 1.7.3"

(page 78, first line of equation (4.23)) Insert a subscript I so that the line reads

$$\sigma_{\mathrm{T}} = \frac{4\pi}{I_{\mathrm{I}}k}\sum_{\eta\eta'}\mathrm{Im}\big(I_{\mathrm{I}\eta\eta'}f_{\eta\eta'}\big) = \ldots$$

(page 79, line 7 from top) Change "(2.8)" into "(2.7)" and "(4.17)" into "(4.18)"

(page 79, equation (4.26)) Delete the fraction "$\frac{1}{k^2}$" after the first equal sign, so that the equation reads

$$\frac{\mathrm{d}\sigma_{\mathrm{S}}}{\mathrm{d}\Omega} = \frac{1}{I_{\mathrm{I}}}\sum_{\eta\eta'}\mathrm{Re}\left(I_{\mathrm{I}\eta\eta'}\boldsymbol{f}_{\eta}^*\cdot\boldsymbol{f}_{\eta'}\right) = \ldots$$

(page 79, first unnumbered equation) Delete the fraction "$\frac{1}{k^2}$" after the equal sign, so that the equation reads

$$\frac{\mathrm{d}\check{\sigma}_{\mathrm{S}\eta\eta'}}{\mathrm{d}\Omega} = \sum_{\bar{\eta}} f^*_{\bar{\eta}\eta} f_{\bar{\eta}\eta'} \ ,$$

(page 97, first unnumbered equation) Insert the factor "$16\pi^2$" after the equal sign and change "$\mathrm{i}^{p'-p}$" into "$\mathrm{i}^{l-l'}$", so that the equation reads

$$K^{(pp')}_{\mu;lml'm'} = 16\pi^2 \sqrt{\frac{3}{4\pi}} C(1,l',l;\mu,m',m)\mathrm{i}^{l-l'} O^{(pp')}_{ll'} \ ,$$

(page 105, third unnumbered equation from bottom) Change "$\delta\gamma$" into "$\delta(\gamma)$"
(page 105, last two unnumbered equations) Some of the subscripts should be changed, so that these equations read

$$\langle \check{\Gamma}^{(\mathrm{ext})}_{\mu;\bar{\eta}\eta} \rangle = c_\Gamma \sum_{plm} s_{\mu;lm} \sum_{\bar{p}\bar{l}} W^{(p)}_{\mathrm{I}\eta l,m-\mu} \bar{\mathcal{S}}^{(p\bar{p})*}_{lm\bar{l}m} W^{(\bar{p})*}_{\mathrm{I}\bar{\eta}\bar{l}m} \ ,$$

$$\langle \check{\Gamma}^{(\mathrm{sca})}_{\mu;\bar{\eta}\eta} \rangle = -\, c_\Gamma \sum_{plm} s_{\mu;lm} \sum_{\bar{p}\bar{p}'} \sum_{\bar{l}\bar{l}'} \sum_{m'} \bar{\mathcal{S}}^{(p\bar{p})}_{l,m-\mu,\bar{l},m'-\mu} W^{(\bar{p})}_{\mathrm{I}\eta\bar{l},m'-\mu} \bar{\mathcal{S}}^{(p\bar{p}')*}_{lm\bar{l}'m'} W^{(\bar{p}')*}_{\mathrm{I}\bar{\eta}\bar{l}'m'} \ ,$$

(page 112, line 8 from bottom) Change "Ferrel" into "Ferrell"
(page 129, line 14 from top) Change "two-step" into "one-step"
(page 327, line 5 from top) Change "eigth" into "8"

Note to Section 2.3

A recent paper of Mishchenko [Opt. Express **15**, 13188–13202 (2007)] has pointed out that Equation (2.14), that should express the Optical Theorem for a particle embedded into an absorbing medium, is incorrect. This equation, that is identical to the one originally devised by Bohren and Gilra [18] and recently revisited by Videen and Sun [19] is based on the assumption that, according to Jones and Kline [J. Math. Phys. **37**, 1 (1958)],

$$\int_{-\infty}^{\infty} \mathrm{d}x \int_{-\infty}^{\infty} \mathrm{d}y\, \mathrm{e}^{\mathrm{i}kzf(x,y)} g(x,y) = \frac{2\pi\mathrm{i}z}{k} g(0,0)$$

also for complex k. Actually, Mishchenko points out that, for complex $k = k_\mathrm{r} + ik_\mathrm{i}$ one has to separate the real part from the imaginary part, thus obtaining

$$\int_{-\infty}^{\infty} \mathrm{d}x \int_{-\infty}^{\infty} \mathrm{d}y \mathrm{e}^{\mathrm{i}k_\mathrm{r}zf(x,y)} \mathrm{e}^{-k_\mathrm{i}zf(x,y)} g(x,y) = \frac{2\pi\mathrm{i}z}{k_\mathrm{r}} g(0,0) \ .$$

As a result, the extinction cross section is

$$\sigma_{\rm T} = \frac{4\pi}{k_{\rm r}} \, {\rm Im}\big[\boldsymbol{f}(\hat{\boldsymbol{k}}_{\rm S} = \hat{\boldsymbol{k}}_{\rm I}, \hat{\boldsymbol{k}}_{\rm I}) \cdot \hat{\boldsymbol{e}}_{\rm I} \big]$$

that is the correct expression of the Optical Theorem for a particle embedded in an absorbing medium.