V. SUPPLEMENTARY MATERIAL
TABLE VI: Energy levels (cm$^{-1}$) of the $4f$ configuration of Ce$^{3+}$ in 21 selected garnets referred to the $4f_1 1\Gamma_5$ ground state, as calculated for the (CeO$_8$)$^{13-}$ clusters embedded in a common cubic confinement potential.

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TABLE VII: Energy levels (cm$^{-1}$) of the 4$f$ configuration of Ce$^{3+}$ in 21 selected garnets referred to the 4$f_1$ 1$\Gamma_5$ ground state, as calculated for the (CeO$_8$)$_{13}^-$ clusters embedded in the embedding potentials of the undistorted garnets. Available experimental data are shown in parentheses.

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<th>Garnet</th>
<th>4$f_2$ 2$\Gamma_5$</th>
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<th>4$f_6$ 6$\Gamma_5$</th>
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**A$_3$Ga$_5$O$_{12}$ garnets**

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<td>2151</td>
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**A$_3$Sc$_5$O$_{12}$ garnets**

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$^a$Reference 46.
TABLE VIII: Unrelaxed host effect (cm$^{-1}$) on the energy levels of the $4f$ configuration of Ce$^{3+}$ in 21 selected garnets referred to the $4f_1 1\Gamma_5$ ground state.

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TABLE IX: Energy levels (cm\(^{-1}\)) of the 5\(d\) configuration of Ce\(^{3+}\) in 21 selected garnets referred to the 4\(f_1\) 1\(\Gamma_5\) ground state, as calculated for the (CeO\(_8\))\(^{13-}\) clusters embedded in a common cubic confinement potential.

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<th>5(d_4) 11(\Gamma_5)</th>
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A\(_3\)B\(_2\)Si\(_3\)O\(_12\) garnets

A\(_3\)Al\(_3\)O\(_12\) garnets

A\(_3\)Ga\(_5\)O\(_12\) garnets
TABLE X: Energy levels (cm$^{-1}$) of the 5$d$ configuration of Ce$^{3+}$ in 21 selected garnets referred to the 4$f_1$ 1$\Gamma_5$ ground state, as calculated for the (CeO$_8$)$_{13}^{-}$ clusters embedded in the embedding potentials of the undistorted garnets. Available experimental data are shown in parentheses.

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$^a$Reference 9, excitation band maximum.
$^b$Reference 10, excitation band maximum.
$^c$Reference 54, excitation band maximum.
$^d$Reference 54, zero-phonon line.
$^e$Reference 1, excitation band maximum.
$^f$Reference 8, zero-phonon line.
$^g$Reference 46, excitation band maximum.
TABLE XI: Energy levels (cm\(^{-1}\)) of the 5\(d\) configuration of Ce\(^{3+}\) in 21 selected garnets referred to the 5\(d_1\) 8\(\Gamma_5\) state, as calculated for the (CeO\(_8\))\(^{13-}\) clusters embedded in the embedding potentials of the undistorted garnets. Available experimental data are shown in parentheses.

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\(^a\)Reference 9, excitation band maximum.
\(^b\)Reference 54, excitation band maximum.
\(^c\)Reference 54, zero-phonon line.
\(^d\)Reference 1, excitation band maximum.
\(^e\)Reference 8, zero-phonon line.
\(^f\)Reference 46, excitation band maximum.
TABLE XII: Unrelaxed host effect (cm\(^{-1}\)) on the energy levels of the 5d configuration of Ce\(^{3+}\) in 21 selected garnets referred to the 4f\(_1\) 1\(\Gamma_5\) ground state.

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Supplementary material figure captions

FIG. 8: Centroid energy component of the $4f \rightarrow 5d$ transition, $\Delta E_{\text{centroid}}(fd)$ (Eq. 2), of Ce$^{3+}$ doped in 21 selected garnets. See Fig. 2 caption.

FIG. 9: Crystal field splitting component of the $4f_1 \rightarrow 5d_1$ transition, $\Delta E_{\text{LF}}(4f_1 \rightarrow 5d_1)$ (Eq. 3), of Ce$^{3+}$ doped in 21 selected garnets. See Fig. 2 caption.

FIG. 10: Energy levels of the $4f$ configuration (referred to the $4f_1 1\Gamma_5$ ground state) of Ce$^{3+}$ in 21 selected garnets, as calculated for the (CeO$_8$)$_{13}^-$ clusters embedded in a common cubic confinement potential. See Fig. 6 caption.

FIG. 11: Unrelaxed host effect on the energy levels of the $4f$ configuration (referred to the $4f_1 1\Gamma_5$ ground state) of Ce$^{3+}$ in 21 selected garnets. See Fig. 6 caption.

FIG. 12: Energy levels of the $5d$ configuration (referred to the $5d_1 8\Gamma_5$ level) of Ce$^{3+}$ in 21 selected garnets, as calculated for the (CeO$_8$)$_{13}^-$ clusters embedded in a common cubic confinement potential. See Fig. 7 caption.

FIG. 13: Unrelaxed host effect on the energy levels of the $5d$ configuration (referred to the $5d_1 8\Gamma_5$ level) of Ce$^{3+}$ in 21 selected garnets. See Fig. 7 caption.

FIG. 14: Energy levels of the $5d$ configuration (referred to the $4f_1 1\Gamma_5$ ground state) of Ce$^{3+}$ in 21 selected garnets, as calculated for the (CeO$_8$)$_{13}^-$ clusters embedded in the embedding potentials of the undistorted garnets. See Fig. 7 caption.
FIG. 15: Energy levels of the 5d configuration (referred to the 4f1 1Γ5 ground state) of Ce³⁺ in 21 selected garnets, as calculated for the (CeO₈)₁³⁻ clusters embedded in a common cubic confinement potential. See Fig. 7 caption.

FIG. 16: Unrelaxed host effect on the energy levels of the 5d configuration (referred to the 4f1 1Γ5 ground state) of Ce³⁺ in 21 selected garnets. See Fig. 7 caption.
Figure 8. Seijo and Barandiarán
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Figure 10. Seijo and Barandiarán
Figure 11. Seijo and Barandiarán
Figure 12. Seijo and Barandiarán
Figure 13. Seijo and Barandiarán
Figure 14. Seijo and Barandiarán
Figure 15. Seijo and Barandiarán
Figure 16. Seijo and Barandiarán