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CORRECTION

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Correction: Chromium-activated phosphors: from theory to applications

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Correction for 'Chromium-activated phosphors: from theory to applications' by Shengqiang Liu *et al.*, *Chem. Soc. Rev.*, 2026, **55**, 1954–1998, https://doi.org/10.1039/D5CS00957J.

The authors regret that there were several errors in the original article.

Page 1955:

- the biography of Quanlin Liu should say "Since 2005, he has been a full professor in Materials Science at the University of Science and Technology Beijing (USTB).

Page 1957:

- section 2.1 should start "The 3d orbital with an angular quantum number of 2 comprises…"
- the sentence beginning "Besides the octahedron" should read "Besides the octahedron, there are some other regular polyhedra, such as 4-coordinated tetrahedron (T_d symmetry), 8-coordinated cube (O_h symmetry), and 12-coordinated cuboctahedron (O_h symmetry)."
- eqn (1) should read

$$\begin{aligned}\langle\psi_{nlm}|V|\psi_{nlm}\rangle &= \int_0^{\infty}\int_0^{\pi}\int_0^{2\pi} R_{nl}(R)\Theta_{lm}(\theta)\Phi_m(\phi)VR_{nl'}(R)\\ &\quad\times\Theta_{l'm'}(\theta)\Phi_{m'}(\phi)R^2\sin\theta\,\mathrm{d}R\,\mathrm{d}\theta\,\mathrm{d}\phi\end{aligned} \tag{1}$$

- eqn (2) should read

$$\psi_{nlm} = R_{nl}(r)Y_m^l(\theta,\ \phi) \tag{2}$$

"where R_{nl} and Y_m^l represent the radial and angular parts of the wavefunction, respectively."

Page 1958:

- the sentences near the end of section 2.1 beginning "In a tetrahedral coordination", should read "In a tetrahedral coordination, the t_2 orbitals point more directly toward the ligands, resulting in significant electrostatic interaction with higher splitting energy, while the e orbitals are directed toward the inter-ligand gaps (Fig. 2a). Therefore, the t_2 orbitals of the tetrahedron lie above the e orbitals in energy."
- the second sentence of section 2.2 should end "and L is the total orbital angular momentum quantum number."
- "Hundt's rule" should read "Hund's rule".

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Page 1961:

- the sentences beginning "The anomalous luminescence" should read "The anomalous luminescence due to AFMC has been documented in inorganic matrices heavily doped with Mn^{2+} or Cr^{3+}, whereas the FMC has only been experimentally observed in limited cases involving Mn^{2+} activated sulfide.[8,57-59]

Fig. 6b and c display the schematic presentations of the energy level splitting of the Cr^{3+}–Cr^{3+} pair due to AFMC."

- eqn (4) should read

$$E(S) = -J[S(S+1) - S_A(S_A+1) - S_B(S_B+1)] \quad (4)$$

Page 1963:

- in the sentence beginning "Due to high coordination energy and charge balance", the radius of Ge^{4+} in six-coordinated surroundings should read 0.53 Å.

Page 1965:

- eqn (7) should read

$$D = \frac{1}{6}\sum_{i=1}^{6}\frac{|l_i - l_{av}|}{l_{av}} \quad (7)$$

Fig. 2, 3 and 8 were incorrect in the original article. The correct figures are shown here.

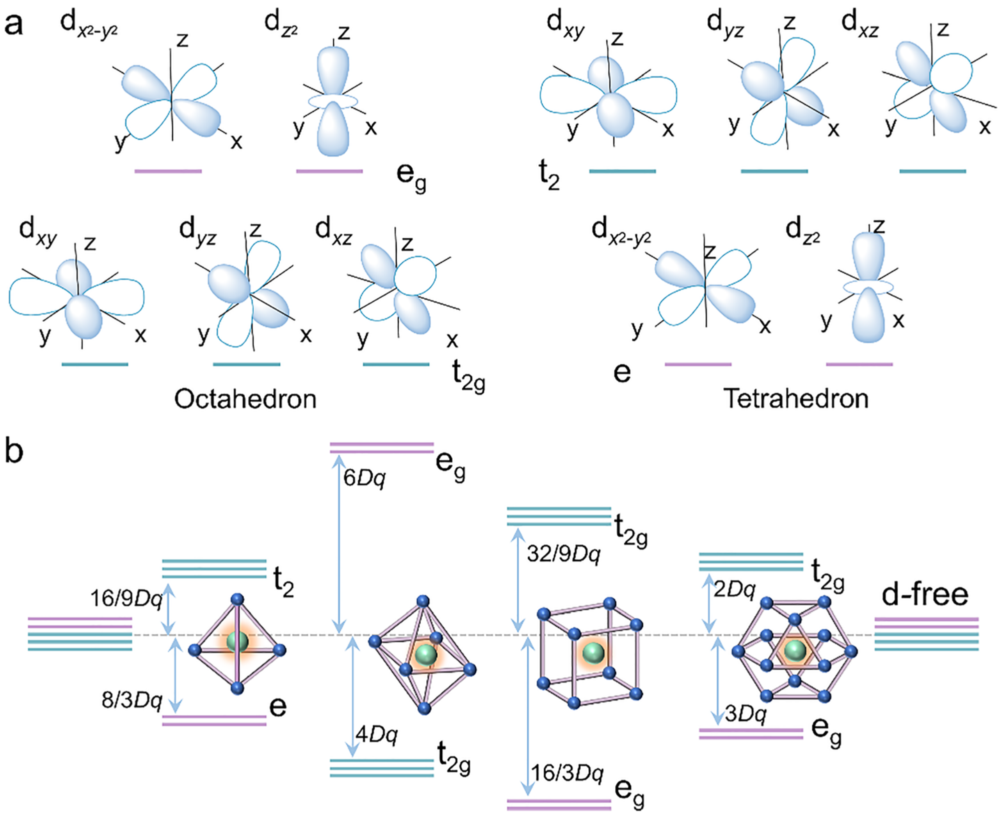

Fig. 2 Splitting of 3d orbital in polyhedral coordination. (a) Visualization of d orbitals in octahedral and tetrahedral sites. (b) Free 3d orbital with 5-degenerate state and associated crystal field splitting in a regular polyhedral potential.

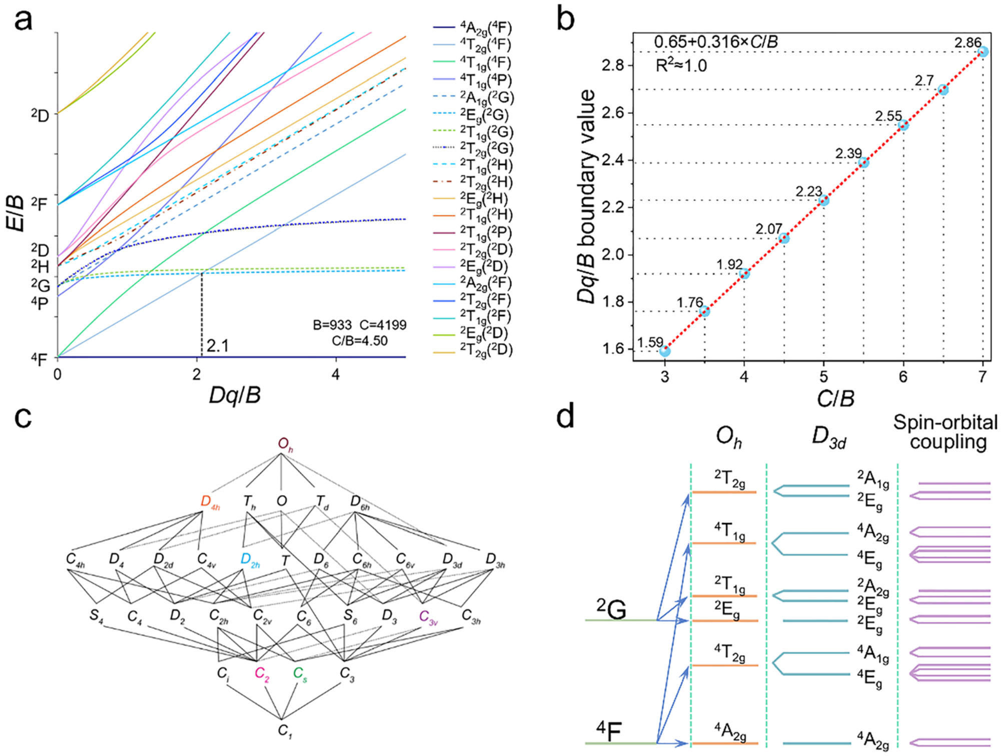

Fig. 3 Energy level of Cr^{3+} ions in octahedral sites. (a) Tanabe–Sugano diagram of Cr^{3+} ions in octahedral O_h symmetry. (b) Linear dependence of boundary *Dq*/*B* value on *C*/*B* value. Reproduced with permission.[32] Copyright 2024, American Chemical Society. (c) Branching rules of the 32-point symmetries. Reproduced with permission.[47] Copyright 2013, Royal Society of Chemistry. (d) Crystal field splitting and spin–orbital coupling of Cr^{3+} ions in D_{3d} symmetry.

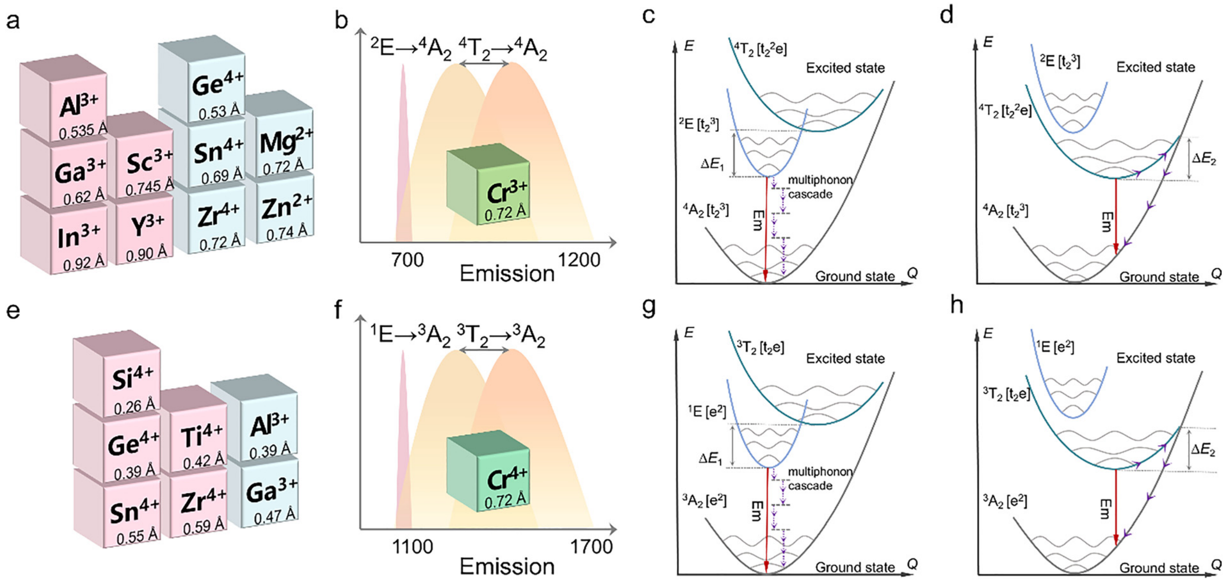

Fig. 8 Occupation and configuration coordinate diagram of chromium ions. (a) Selective cationic sites for the incorporation of Cr^{3+} ions. (b) Schematic luminescence spectrum of Cr^{3+} in octahedral sites. Configuration coordination diagram of Cr^{3+} ions in (c) strong and (d) weak crystal field surroundings. (e) Selective cationic sites for the incorporation of Cr^{4+} ions. (f) Schematic luminescence spectra of Cr^{4+} in tetrahedral sites. Configuration coordination diagram of Cr^{4+} ions in (g) strong and (h) weak crystal field surroundings. ΔE_1 denotes the energy gap between the ^2E and $^4T_2$ states for Cr^{3+} (^1E and $^3T_2$ states for Cr^{4+}), and ΔE_2 represents the ionization energy from the $^4T_2$ or $^3T_2$ state to the intersection position. The red arrows denote the radiative process and the purple arrows indicate the quenching pathway.

References 1 and 342 were incorrect in the original article. The correct references are shown below as ref. 1 and 2, respectively. The Royal Society of Chemistry apologises for these errors and any consequent inconvenience to authors and readers.

References

1 G. Liu, W. Chen, Z. Xiong, Y. Wang, S. Zhang and Z. Xia, *Nat. Photonics*, 2024, **18**, 562–568.
2 R. A. Sharrock, *Genome Biol.*, 2008, **9**, 230.