# Editor of ChemPhotoChem

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Geneva, July 7, 2021

Concern: Submission of an invited mini-review to a special issue of *ChemPhotoChem* dedicated to chiral emissive compounds and CPL.

Dear Editor,

With this letter, we enclose an electronic copy of our manuscript entitled ‘**Chiral Cr(III) complexes as promising candidates for Circularly Polarized Luminescence**’ which we would like to be considered for publication as a mini-review in the special issue of *ChemPhotoChem* dedicated to chiral emissive compounds and CPL.

There is a renewed interest for using cheap, earth abundant 3d-block transition metals for advantageously replacing the rarest and precious 4d and 5d chromophores as active centers for photophysical and photochemical applications (see O. S. Wenger, *J. Am. Chem. Soc.* **2018**, *140*, 13522-13533 or C. Forster, K. Heinze, *Chem. Soc. Rev.* **2020**, *49*, 1057-1070). In this context, inert and strongly emissive trivalent chromium complexes appear as inescapable candidates for this challenge. Moreover, the kinetic inertness of Cr(III) complexes is exceptional along the 3d-block series and can be exploited for preparing pure chiral complexes (with no racemization), which are able to induce some rare near-infrared circularly polarized emission, a properties highly wanted for the design of modern security inks (L. E. MacKenzie, R. Pal, *Nature Rev. Chem.* **2021**, *5*, 109-124.).

Whereas the whole community recognized that the electric-dipole forbidden/magnetic dipole allowed character of intrashell f-f transitions makes chiral lanthanide complexes as the most promising CPL chromophores, the closely-related intrashell spin-flip d-d transitions operating in chiral Cr(III) complexes remain fairly underexplored for their CPL properties.

In this mini-review, we first illustrate in a tutorial way the strategies followed for preparing pure chiral inert six-coordinate Cr(III) complexes working as chiroptical probes. We then focus on the physical conditions that should be fulfilled for maximizing CPL emission and dissymmetry factors. We finally exhaustively present all the chiral Cr(III) complexes (to the best of our knowledge) that have been isolated and studied for their chiroptical properties, with a special highlight on their CPL output.

According to the title of this special issue dedicated to circularly polarized luminescence, we foresee that *ChemPhotoChem* could be interested in its publication.

Thanking you in advance for your consideration of this manuscript, I remain.



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