# Editor of *Chemical Communications*

Geneva, July 15, 2020

Concern: Submission of a contribution to *Chemical Communications*.

Dear Editor,

With this letter, we enclose an electronic copy of our manuscript entitled ‘**Upgrading Luminescent Polypyridyl Heteroleptic Cr(III) Complexes with High Quantum Yields and Long Excited State Lifetimes**’ which we would like to be considered for publication in Chemical Communications.

Contrary to precious and costly ruthenium(II) complexes, which are well represented as building blocks in photophysically active metallosupramolecular assemblies (see for instance Mede et al., 'Chemistry-on-the-complex': Functional Ru(II) polypyridyl-type sensitizers as divergent building blocks. *Chem. Soc. Rev.* 2018, **47**, 7577-7627), the economically appealing analogous Cr(III) complexes are essentially absent in supramolecular multicomponent photonic devices because of the lack of synthetic strategies for the preparation of versatile heteroleptic and kinetically inert Cr(III)-based chromophores. The recent burst of activity accompanying the design of novel homoleptic Cr(III) sensitizers programmed for providing long near-infrared excited state lifetimes (see Wenger, Photoactive Complexes with Earth-Abundant Metals. *J. Am. Chem. Soc.* 2018, **140**, 13522-13533 or Forster and Heinze, Photophysics and photochemistry with Earth-abundant metals - fundamentals and concepts. *Chem. Soc. Rev.* 2020, **49**, 1057-1070) further pointed out the striking lack of easy access to heteroleptic analogues with comparable optical properties, but much larger opportunities for applications. After having adapted the *Kane-Maguire* synthetic strategy for labilizing Cr-X bond bonds under soft conditions (Jimenez et al, Versatile Heteroleptic Bis-Terdentate Cr(III) Chromophores Displaying Room Temperature Millisecond Excited State Lifetimes. *Chem. Commun.* 2018, **54**, 13228-13231) we report on the unprecedented synthesis and characterization of heteroleptic [Cr(L)(L’)]3+ complexes, where L and L’ are two different polyaromatic tridentate N3 ligands forming exclusively six-membered chelate rings. The minor distortion from octahedral geometry combined with strong ligand-field strengths provide strongly luminescent probes which could be exploited both as sensitizers or activators in polymetallic light-concerting devices.

Taking into account that this flexible and versatile synthetic strategy may open vast prospects for pushing molecular Cr(III) photophysics and chemistry into the field of applications, we foresee that it is worth to deliver a short and concise message to the chemical community via the publication of a rapid communication in Chemical Communications.

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



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