

*In-situ chloride oxidation mediated formation of perchloromolybdate type polyoxometalates*Shounik Paul<sup>1</sup>, Soumyajit Roy<sup>1</sup><sup>1</sup>Department Of Chemical Sciences IISER Kolkata, Kolkata, India

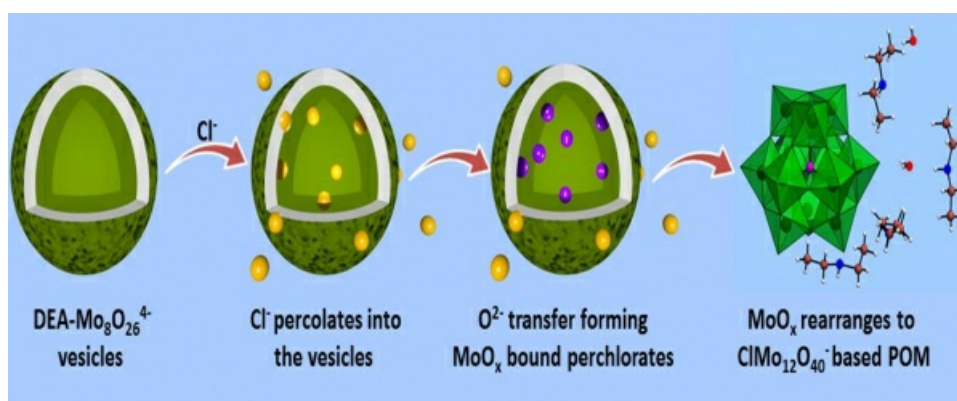
E-mail: shounik.paul@gmail.com

Polyoxometalates (POMs) are discrete nuclearities of transition metals (Mo, V, W and Nb) at high oxidation states (+6, +5, +4) which bridge the gap between mononuclear oxo/hydroxometalates and polymeric metallic oxides with appropriate charge to ionic radius ratio and prohibit infinite polymerization by forming n-bonds with oxo groups [1,2]. In this context, Perchloromolybdate POM's has been synthesized and fully characterized both in solid state and aqueous solution structurally and compositionally. Hierarchical self-assembly ensues in emergence of such clusters through a sequence of complex interdependent pathways of reactions; whose principles and practical limits are still much left to be understood. Here, we present in-situ Cl<sup>-</sup> oxidation mediated ClMo<sub>12</sub>O<sub>40</sub><sup>-</sup> formation. Such an 8 e<sup>-</sup> redox process with fast, reversible multi-electron redox transformation under rather mild conditions still remain unexplored with POMs and can serve a great deal in understanding systems like Photosystem II [3]. Such a strategy of in-situ chloride oxidation and contributions of perchlorate in the self-assembly of higher nuclearity cluster will be presented.

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[2] Miras, H. N., Vilà-Nadal, L., &amp; Cronin, L., Chemical Society Reviews 2014, 43, 5679-5699.

[3] Hocking, R.K., Brimblecombe, R., Chang, L.Y., Singh, A., Cheah, M.H., Glover, C., Casey, W.H. &amp; Spiccia, L., Nature Chemistry, 2011, 3, 461-466.



**Keywords:** [Polyoxometalate single crystal](#), [Chloride oxidation](#), [Self-assembly](#)