Covalent Organic Polymers (COPs) for selective metal adsorption from wastewaters

*Cafer T. Yavuz[1] , Hasmukh A. Patel[2] and Jeehye Byun[3]

[1, 2, 3] *Graduate School of EEWS, KAIST, Daejeon 305-701, Korea*
[1] *yavuz@kaist.ac.kr*

ABSTRACT

Metal removal from wastewaters serves the world in two ways; 1- removing toxic or hazardous materials, 2- recovering precious/semi-precious metals. Among the removal options, solid, reversible adsorbents emerge as the best candidates since repetitive use is possible. The challenge, however, is the capacity and selectivity. In order to address both, we looked into designing porous organic solids for the purpose of selective binding to water borne contaminants. Robust and inexpensive, porous polymers show great promise in water treatment applications. Here we report that manganese can be removed near quantitatively by Covalent Organic Polymers (COPs) at 1 ppm concentrations (Fig 1). Our studies on other metals, such as Co, Ni, also show great affinity by similar COP structures.
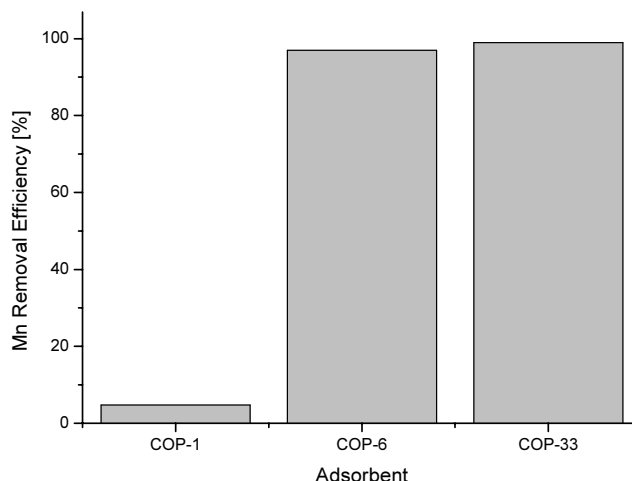
Fig. 1 Manganese removal efficacy of COP-1, 6 and 33.

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[1] Professor
[2] Postdoctoral Scholar
[3] Graduate Student

REFERENCES

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