Sulfonated Pentablock Copolymer Membranes and Graphene Oxide Addition for Efficient Removal of Metal Ions from Water

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Supporting Information

Figure 1. FT-IR spectrum of GO.
Table 1. Amount of each metals in mg/L at different salts concentrations i.e. 500 mg/L (a), 1000 mg/L (b), 2000 mg/L (c).

| Salt      | Metal (%) | Metal Concentration (mg/L) | Metal Concentration (mg/L) | Metal Concentration (mg/L) |
|-----------|-----------|----------------------------|-----------------------------|-----------------------------|
| CoCl₂     | 25        | 118.3                      | 261.9                      | 502                         |
| Ni(NO₃)₂  | 20        | 102                        | 221.2                      | 435.8                       |
| Cr₂(SO₄)₃ | 14.5      | 75                         | 131.6                      | 257.9                       |
| Pb(NO₃)₂  | 62.5      | 308.5                      | 698.5                      | 1040                        |

Table 2. Values* of ionic radii, electronegativity and atomic mass for the investigated cations.

| Ionic radii (amstrong) [ref.] | Electronegativity (Pauling) | Atomic Mass (u.a.) |
|-------------------------------|-------------------------------|--------------------|
| Cr³⁺                          | 0.615                         | 1.66               | 51.9961            |
| Co²⁺                          | 0.58-0.9                      | 1.88               | 58.9332            |
| Ni²⁺                          | 0.49-0.69                     | 1.91               | 58.6934            |
| Pb²⁺                          | 0.98-1.48                     | 2.33               | 207.2              |

* "Revised Effective Ionic Radii and Systematic Studies of Interatomic Distances in Halides and Chalcogenides" by R. D. Shannon. Central Research and Development Department, Experimental Station, E. I. Du Pont de Nemours and Company, Wilmington, Delaware 19898, U.S.A. Published in Acta Crystallographica. (1976). A32, Pages 751-767.