

### 3- Preparation of activated carbon from alginate

#### Objectives:

1/ Carbonise magnesium citrate (fill the alumina boat to the maximum) at up to 800°C [1] for 1 hour under a flow of N<sub>2</sub> gas.

2/ Prepare 100 mL of an aqueous alginate solution (2% by weight).

3/ Prepare alginate hydrogel beads [2] (enough to fill the alumina boat) by adding a solution of alginate dropwise into a gelling bath consisting of a solution of CaCl<sub>2</sub> (0.5 mol/L).

4/ Carbonise the alginate hydrogel beads at 800°C for 1 hour under a flow of N<sub>2</sub> gas.

5/ Study the adsorption kinetics of Brilliant Blue-R (initial concentration 40 mg/L = 40 ppm, mass of material approximately 0.3 g, volume 100 mL) for each of the materials prepared. The standard range will be between 1 and 50 ppm.

6/ Reflux the remaining carbonaceous materials (HCl 5 mol/L) for 1 h. Dry the washed products and deduce the mass of oxide (MgO or CaO) initially contained in each of the chars.

[1] Soneda, Y., & Kodama, M. (2013). Effect of mesopore in MgO templated mesoporous carbon electrode on capacitor performance. *Electrochemistry*, 81(10), 845-848.

[2] Rocher, V., Siaugue, J. M., Cabuil, V., & Bee, A. (2008). Removal of organic dyes by magnetic alginate beads. *Water research*, 42(4-5), 1290-1298.