Membranes for the selective recovery of ionic species and nutrients

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Introduction

The current style of living requires 1.4 times the amount of resources provided by the planet earth, which means that we are depleting our earth. Therefore it is necessary to change our current linear economy to a circular economy and to focus on the recovery and reuse of valuable compounds. This sustainable economy requires efficient and effective separation technologies such as membranes, for selective recovery of components.

Project summary

Industrial separations at the real molecular level are till now practically impossible, especially in the size range below 1000 Da. Therefore, the aim of this project is to develop the next generation membranes with molecular selectivities below the 1000 Da range for industrial water purification and recovery of valuable ions and nutrients. By using self-organizing liquid crystalline polymeric materials as starting point and by chemical functionalization of the pore interior, full control of pore size, pore functionality and thus solute-membrane interactions and separation performance is achieved. With this approach, two independently tunable parameters (pore size and pore functionality) are obtained to control separations at a true molecular level.

Project goals

Possible projects:

• Synthesis of liquid crystalline polymers
• Membrane development, characterization and performance evaluation
• A combination of above

There are many possibilities for different projects, so if you are interested please do not hesitate to contact me for further information.

Contact information

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