

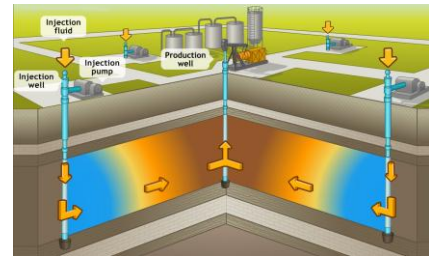
Polymeric Surfactants for Enhanced Oil Recovery

Name: Patrizio Raffa
Function: Post-doc
E-mail: p.raffa@rug.nl
Tel.: +31 (0)50 363 4462
Office: 5118.0211
Project partners: DPI, Shell, SNF, TuDelft

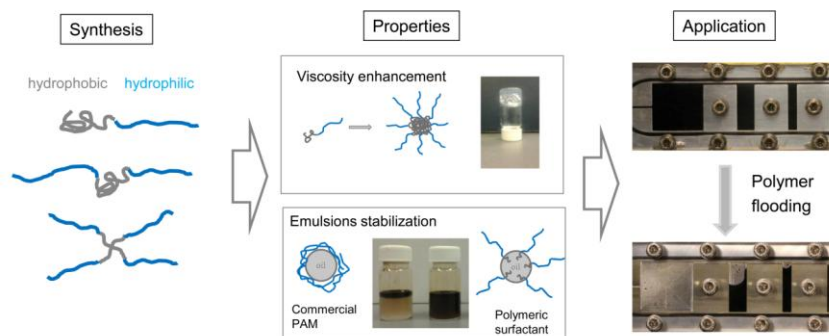


Description of research

Polymeric surfactants (amphiphilic polymers) are ubiquitous in products of everyday life (they are contained in most of the commercial detergents, for example). From simple industrial soaps, they became in few decades very important systems for relevant applications like drug delivery and treatment of cancer. The use of amphiphilic polymers in several applications is directly connected to their rheological and interfacial properties, but not much is known about how they affect the processes. One relevant potential application of these polymers concerns their use in enhanced oil recovery (EOR). In traditional EOR, water solutions of complex mixtures of chemicals are injected in the ground in order to increase the amount of oil that it is possible to extract from a reservoir. High solution viscosity and low interfacial tension are required in order to achieve good recovery. Polymeric surfactants represent a promising alternative to the currently used formulations. The project is developed within a research program on EOR by DPI (Dutch Polymer Institute), in collaboration with Shell, SNF and TUDelft. The research is structured as follows:



- Synthesis of polymeric surfactants characterized by different compositions and molecular architectures using controlled radical polymerization methods (ATRP);
- Characterization of flow and interfacial properties of the prepared systems (dynamic rheology, surface tension, etc.);
- Evaluation of performance in EOR through the design of *ad hoc* experiments (filtration tests, flow cells, core flood).



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