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15295 | Preparation and characterization of films based on biopolymers

Santos, Patrícia R. M., Faculdade de Ciências da Universidade do Porto, Portugal

Azenha, Manuel A., Faculdade de Ciências da Universidade do Porto, Portugal

Pereira, Carlos M., Faculdade de Ciências da Universidade do Porto, Portugal

Silva, António F., Faculdade de Ciências da Universidade do Porto, Portugal

In recent years, there has been a decline in natural resources, as well as an increase in the negative impact that companies wastes have on the environment, which has led to the emergence of a "circular and sustainable economy". Within this theme, the objective of the present work is the use of components extracted from wastes or by-products of the fishery industry in order to explore its potential application in membrane synthesis for later use in areas such as optical sensors of heavy metals based on membranes of biopolymers.

The preparation of the membranes was based on the use of polysaccharides, such as chitosan, chondroitin sulfate and fucoidan, extracted from the wastes, of crustaceans, fish and brown seaweed, respectively.

Different membranes were synthesized based on two biopolymers, optimizing a synthesis already described in the literature and adapting it. [1] Biopolymers and siloxanes-based membranes were also synthesized, adjusting the already described method and recreating to other biopolymers. [2] Due to the flexible chemical structures of these biopolymers it was possible to use molecular imprinting of Pb^{2+} as an attempt to improve the selectivity and capacity of these membranes for this species (Figure 1).

The synthesized membranes were further characterized using different techniques such as FTIR, TGA, BET and its interactions with selected cations were evaluated.

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References

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[2] Y. Nur, E. Rohaeti and L. Darusman, *Indonesian Journal of Chemistry*, 17 (2017) 7.

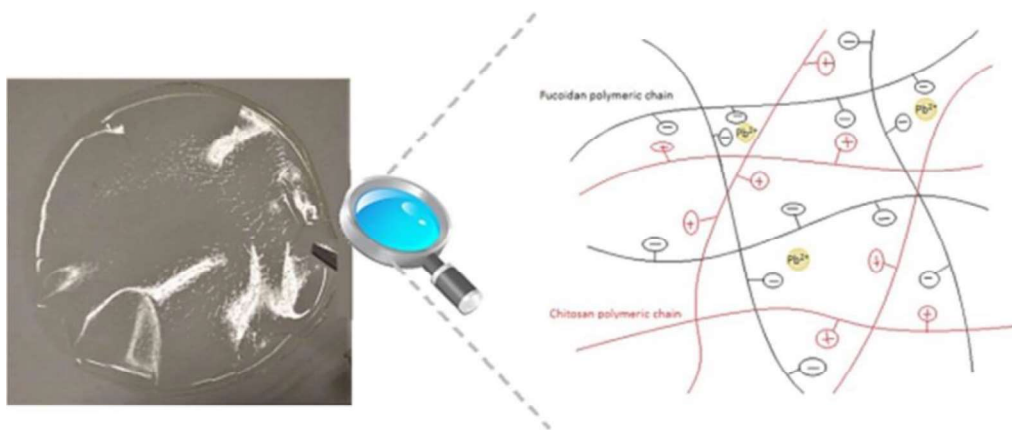


Figure 1 - Image of a membrane with the scheme of reticulation and example of interactions between biopolymer chains and metal cation.