

"Preparation of ceramic membranes of nanofiltration by nano-deposition to be used in the purification of water with diferent contaminants"

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Abstract

New deep eutectic naturals solvents (NADEs) were synthesized by a green method, starting from sacarose and urea. These have been developed as a type of ionic liquid and had demonstrated great capacity to remove pollutants from water. The precursors were mixed at 1:3 molar sacarose/ethylene glycol, and were characterized by dynamic light scattering, FTIR, Viscosity, Mass Spectroscopy and Nuclear Magnetic Resonance (NMR) of ^{1}H y ^{13}C. Later, were deposited on ceramic menbranes and presents enhaces properties, like biodegradable, economical and environmentally friendly.

Word Keys: ionic liquid, deep eutectic naturals solvents

Introduction

In Mexico, SEMARNAT and CONAGUA, based on the actions of the National Development Plan, set the goal of complying with maximum permissible limits (0.1 parts per million (ppm)) for the discharge of contaminants in water, which is why research has been developed in the synthesis by " Green chemistry "of solvents capable of eliminating said pollutants, such pollutants are usually heavy metals such as Cadmium (Cd) [1], Arsenic (As) [2], Iron (Fe), Zinc (Zn) [3] and synthetic dyes [4]. This type of green solvents are called Natural Deep Eutetic Solvents (NADEs); These are environmentally friendly in the

degradation of pollutants since they are biodegradable, non-toxic, recyclable, non-volatile and non-flammable [5] [6]. NADEs use cellular components such as sugars, alcohols, amino acids, organic acids and choline derivatives as the main reagent [7]. In the present work, NADEs were synthesized with nanometer particles of sucrose which allow the removal of pollutants in the aqueous phase of Chromium (Cr) and Nickel (Ni).

Biography

Irlanda Cruz has completed the master's degree studies at CIITEC in 20112-2014, I am doing pHD studies in Nanoscience and micro and Nanotechnology at ESIQIE-IPN, I have two publications in international journals, I am a member of the International Association of Nanoscience and Nanotechnology.

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[1] Justyna Płotka-Wasylka, Małgorzata Rutkowska, KatarzynaOwczarek, Extraction with environmentally friendly solvents, TrAC Trends in Analytical Chemistry, Volume 91, June 2017, Pages 12-25.

[2] Rizwan Ali Zounr, Mustafa Tuzen, Muhammad Yar Khuhawar, Ultrasound assisted deep eutectic solvent based on dispersive liquid liquid microextraction of arsenic speciation in water and environmental samples by electrothermal atomic absorption spectrometry, Journal of Molecular Liquids, Volume 242, September 2017, Pages 441-446.

[3] Emadaldin Habibi, Kamal Ghanemi, A novel digestion method based on a choline chloride–oxalic acid deep eutectic solvent for determining Cu, Fe, and Zn in fish samples, Analytica Chimica Volume 762, 31 January 2013, Pages 61-67.

[4] Shuqiang Zhu, Jia Zhou, Hongfang Jia, Haixia Zhang, Liquid–liquid microextraction of synthetic pigments in beverages using a hydrophobic deep eutectic solvent, Food Chemistry, Volume 243, 15 March 2018, Pages 351-356.

[5] E. Durand, J. Lecomte, B. Baréa, P. Villeneuve, Towards a better understanding of how to improve lipase-catalyzed reactions using deep eutectic solvents based on choline chloride, Eur. J. Lipid Sci. Technol. 116 (2014) 16–23.

[6] Q. Zhang, K. De Oliveira Vigier, S. Royer, F. Jérôme, Deep eutectic solvents: syntheses, properties and applications., Chem. Soc. Rev. 41 (2012) 7108–46.

[7] B. Tang, K.H. Row, Recent developments in deep eutectic solvents in chemical sciences, Monatshefte Fur Chemie. 144 (2013) 1427–1454.