Prospective supervisor's form

Personal data

The prospective supervisor's name: dr hab. inż. Adam Kloskowski
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Research interests

Discipline: Chemical sciences
Research area: Environmental Science
Additional research area: Chemistry
Key words: SPME, Sample preparation, ionic liquids, porous materials

Research interests or topics offered for PhD research

The key stage in determining the quality and reliability of the analysis's final results is preparing representative samples for analysis. Recently, some of the additional conditions, delivered from Green Analytical Chemistry (GAC) principles, became a propulsive force for the expansion of new methodological and technical solutions dedicated to sample preparation. The Solid-phase microextraction (SPME) technique corresponds to the GAC requirements, being one of the most popular sample preparation techniques. The process of isolation of analytes from a sample using the SPME technique can occur either by binding them to the adsorbent surface (adsorption) or by dissolving analytes in the sorption phase (absorption). Whenever adsorbents are utilized as stationary phases in the SPME, limitations concerned the competing of analytes, and the loss of extraction linearity can occur. These limitation does not occur in the case of "liquid-like" materials, where the isolation of analytes is being done with the absorption mechanism. Ionic liquids are a group of compounds that fulfill the requirements of the new-type sorbent material. The proposed solution concerns the development of TiO2 nanotubes as the SPME fibers, allowing the qualitative confinement of ILs inside the pores of the TiO2 metalcore. An innovative element of the proposed solution is to exclude the coating procedure stage because, from the fiber's material, a porous film is formed from the fiber rod material. In connection with the above, the optimization of the TiO2 nanotube as the SPME fiber is proposed, for maintaining sufficient coating properties, i.e., how thick the coating can be to make the fiber usable. The utilization of the porous TiO2 nanotube as SPME fiber is dedicated to both the HS- and DI- mode of the SPME technique.

Supervision

The number of PhD students who have graduated under the prospective supervisor's supervision: 1
The number of PhD students currently supervised - within the current doctoral school: 1
The number of PhD students currently supervised - within doctoral studies (previous system): 2
Currently accepting new PhD students: Polish and foreign
Funding and equipment

Is funding available for experimental work
Yes

Is the equipment needed to complete a PhD project available in your lab/department
Yes

Bibliometric indicators

Number of journal publications in WoS/Scopus 41
Citations (excluding self-citations) - WoS 929
Citations (excluding self-citations) - Scopus 933
Hirsch index - WoS 16
Hirsch index - Scopus 17

List of the selected key publications

Ionic liquids in the microextraction techniques: the influence of ILs structure and properties
Kloskowski A. , Marcinkowski Ł. , Delińska K. , Yavir K. - TRAC-TRENDS IN ANALYTICAL CHEMISTRY
Journal article / In the printed version (also digital), Publication year: 2020, Points: 140.0
https://dx.doi.org/10.1016/j.trac.2020.115994

The new silica-based coated SPME fiber as universal support for the confinement of ionic liquid as an extraction medium
Kloskowski A. , Mielewczyk-Gryń A. D. , Delińska K. , Yavir K. , Kermani M. - SEPARATION AND PURIFICATION TECHNOLOGY
Journal article / In the printed version (also digital), Publication year: 2020, Points: 140.0
https://dx.doi.org/10.1016/j.seppur.2020.117411

Tuning the extraction properties of ionogel-coated Solid-phase microextraction fibers based on the solvation properties of the ionic liquids
Kloskowski A. , Marcinkowski Ł. , Delińska K. , Yavir K. - SEPARATION AND PURIFICATION TECHNOLOGY
Journal article / In the printed version (also digital), Publication year: 2020, Points: 140.0
https://dx.doi.org/10.1016/j.seppur.2020.116988

Application of ionic liquids in microextraction techniques: Current trends and future perspectives
Namieśnik J. , Kloskowski A. , Marcinkowska R. , Marcinkowski Ł. , Delińska K. - TRAC-TRENDS IN ANALYTICAL CHEMISTRY
Journal article / In the printed version (also digital), Publication year: 2019, Points: 140.0
https://dx.doi.org/10.1016/j.trac.2019.07.025

Measurements of Activity Coefficients at Infinite Dilution for Organic Solutes in the Ionic Liquids N-Ethyl- and N-Octyl-N-methylmorpholinium Bis(trifluoromethanesulfonyl)imide. A Useful Tool for Solvent Selection
Polkowska Ż. , Kloskowski A. , Marcinkowski Ł. , Eichenlaub J. , Ghasemi E. - MOLECULES
Journal article / In the printed version (also digital), Publication year: 2020, Points: 100.0
https://dx.doi.org/10.3390/molecules25030634

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