

Obrazac odobrenog znanstvenog projekta:

Naziv projekta Title	Continous protein extraction in a microextractor by aqueous two-phase systems promoted with natural deep eutectic solvents: from wasate to valuable produc(s)
Sažetak projekta Summary	<p>ENGL:</p> <p>The aim of this project is to develop a sustainable and green enzyme production and utilization pathway combining food waste, natural green eutectic solvents (NADES) and microsystem technology. For this purpose, to achieve Project goals, specific aims were created:</p> <p>(i) NADES preparation and characterization: Different NADES will be prepared combining natural components and characterized based on chemical and physical properties</p> <p>(ii) Enzymes extraction on a macro and microscale: Continuously operated microextraction will be applied for protein extraction and compared to extraction efficiency on a macroscale. Lipase from <i>Thermomyces lanuginosus</i> produced by solid-state fermentation on solid waste from food industry will be used as model system. Response Surface Methodology (RSM) optimization will be performed to determine optimal extraction conditions. The results of the experiments conducted in different microextractor configurations will be compared in order to select the most appropriate extraction system. The influence of NADES on enzyme stability, activity and selectivity as well on enzyme conformation will be studied.</p> <p>(iii) Mathematical modelling: A 2D model at steady-state conditions will be developed to shorten further laboratory work oriented towards extraction. Also, model will be used to better understand the flow of the extraction mixture in a microchannel, as well as for optimization of extraction and scaleup.</p> <p>(iv) Development of the integrated extraction system: System will consist of several microextractors connected in to series. In each of a microextractor, protein extraction process will take place, until the full capacity of NADES is reached.</p> <p>(v) Application: As a final stage, extracted and purified lipase will be used as catalyst for biodiesel production from waste cooking oil in a microreactor.</p>
Voditelj projekta ili koordinator s PTF-a Project Manager	Marina Tišma
Suradnici na projektu Project Associates	-
Izvor financiranja i vrijednost projekta Funding sources	PhosAgro/UNESCO/IUPAC research grants, US\$29,470.00

<i>Institucije partneri na projektu</i> <i>Partner Institutions</i>	Fakultet kemijskog inženjerstva i tehnologije Sveučilišta u Zagrebu (nositelj projekta. Voditeljica: dr. sc. Anita Šalić) Prehrambeno-biotehnološki fakultet Sveučilišta u Zagrebu
<i>Razdoblje realizacije projekta</i> <i>Project period</i>	2022. (jedna godina)
<i>Popis opreme koja će se nabaviti iz sredstava projekta</i> <i>Equipment:</i>	-

Voditelj/koordinator projekta
