

BOOK OF ABSTRACTS



28th INTERNATIONAL SYMPOSIUM ON

ADVANCED IN EXTRACTION TECHNOLOGIES

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ELSEVIER



The ExTech symposium series (International Symposium on Advances in Extraction Technologies)

The ExTech symposium series (International Symposium on Advances in Extraction Technologies) is the premier international event in analytical chemistry, focusing on the areas of sampling and sample preparation. The idea of creating this worldwide conference started in 1999 by Professor Janusz Pawliszyn (University of Waterloo, Canada).

Since then, the symposium has travelled annually around the world.

Its program covers all aspects of sampling and sample preparation, including fundamentals, new materials & technologies, miniaturization, automation & robotics, quality assurance, sustainability assessments, and a wide range of applications. In 2026, we anticipate a focus on hyphenated techniques and direct MS, as well as on the increased role of Artificial Intelligence in the analytical workflow.

The symposium will be held in the historical site of the Gembloux Agro-Bio Tech faculty, a beautiful old abbey that now hosts a vibrant research environment. Besides the scientific program, we will offer you plenty of possibilities to network with colleagues in a cosy atmosphere and with amusing social events.

We are excited to welcome you at EXTECH2026!

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GSAC-12: Green Extraction of Parthenolide from Tanacetum Parthenium using Pluronic 17R4 And Micromixing Process

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Abstract

Efficient and sustainable extraction of lipophilic plant bioactives remains a major challenge due to their limited aqueous solubility and sensitivity to processing conditions. Parthenolide (PAR), a bioactive sesquiterpene lactone found in *Tanacetum parthenium* (feverfew), exhibits significant anti-inflammatory and antitumor potential; however, its recovery from plant matrices is often limited by its low natural abundance and the use of toxic organic solvents. Therefore, the development of greener extraction platforms capable of simultaneously isolating and stabilizing such hydrophobic compounds is of considerable interest. In this work, a novel process integrating extraction and micellar solubilization was investigated using the triblock copolymer Pluronic 17R4 as both an extraction medium and a micelle-forming agent in aqueous solution. The process was implemented in a Micropore LDC-1 dispersion cell micromixer, enabling efficient mass transfer and rapid mixing under controlled conditions. The results demonstrated that the presence of Pluronic 17R4 significantly enhanced PAR recovery through micellar solubilization. Increasing the copolymer concentration improved the extraction yield, reaching a maximum of approximately 3.8 mgPAR/gbiomass at higher polymer concentrations. Under optimized conditions, the process achieved PAR yields of up to approximately 4.3 mgPAR/gbiomass, comparable to or higher than those typically reported for conventional organic solvent-based extraction methods. The micromixer-based process further intensified extraction by improving mixing efficiency and reducing mass transfer limitations. Importantly, the developed system enables both the extraction and simultaneous stabilization of PAR within polymeric micelles in an aqueous environment, thereby eliminating the need for hazardous organic solvents. The proposed coupled extraction-micellization approach represents a promising green processing strategy for the recovery of hydrophobic bioactive compounds from plant matrices and highlights the potential of micromixer-based technologies for process intensification in extraction applications.

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