

Title: "Exploring the Power of Supercritical Fluids: Materials and Beyond"

Abstract

To address environmental challenges and reduce greenhouse gas emissions, significant efforts are being made to explore alternative methods. A key advancement in this regard is the utilization of high-pressure technology, particularly in combination with supercritical fluids. These fluids possess remarkable solvating power, enhanced mass transfer capabilities, and environmentally friendly characteristics, making them invaluable tools in numerous industries. One notable application is supercritical fluid extraction, which enables the efficient extraction of valuable compounds from natural sources while preserving their quality. Additionally, supercritical fluids are extensively employed in polymer processing, including particle formation and encapsulation, foaming processes, enzymatic reactions, supercritical drying of aerogels, supercritical-fluid chromatography, jet cutting, dry cleaning, sterilization processes, virus inactivation in plasma fractions, and powder coatings. Moreover, supercritical fluids play a crucial role in large-scale operations within petrochemical plants, coal processing, advanced power cycles utilizing them as working fluids, carbonization of cement, and carbon capture and storage applications.

Curriculum vitae



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Assistant Professor Dr. Gregor Kravanja is affiliated with the Faculty of Civil Engineering, Transportation, and Architecture at the University of Maribor, where he is involved in teaching. He is also employed as a researcher on the P2-0046 research program, which focuses on Separation Processes and Production Design, at the Faculty of Chemistry and Chemical Engineering at the University of Maribor. Dr. Kravanja research in the field of »green solvents« so-called supercritical fluids (SCFs) that are used for the sustainable production of new products with special characteristics, fewer toxic residues, and low energy consumption. He designed several high-pressure processes that are relevant, (bio)material, pharmaceutical, and petrochemical applications. Additionally, dr. Kravanja is a highly engaged researcher in the field of construction and building materials.