Introduction

Supercritical fluids (SCFs) are gaining increasing attention as attractive alternatives for traditional solvents in green chemistry. The unique properties of SCFs allow for technologically and economically overcoming the limitations of traditional solvents. Supercritical fluids are characterized by their ability to exist in a fluid state at temperatures and pressures beyond their critical point, which allows them to have properties similar to gases and liquids.

Background

Solid-fluid (S-V) phase equilibrium is of great importance in many chemical processes, including the dissolution of solids in SCFs. The phase behavior of solutes in SCFs is influenced by various factors, such as temperature, pressure, and the properties of the solute and the SCF.

Experimental

The knowledge of phase behavior of solutes of interest under the SCF conditions is also essential for the development of any SCF process. The determination of the lower critical end point (LCEP) is crucial for understanding the behavior of solutes in SCFs.

Results and Discussion

Depression of melting point under high pressure CO\(_2\)

Experimental

The phase behavior of a system is determined through a combination of experimental and theoretical methods. In this study, the phase behavior of a binary system was determined using a high-pressure view cell apparatus. The phase behavior of a ternary system was investigated using a Phase Monitor (Supercritical Fluid Technologies, Inc.) consisting of a view cell (maximum capacity of 30 mL) with two quartz windows, a mixer, a light source, a videocamera, and a television monitor with VCR.

References