

## **Non-Conventional Simultaneous Enhanced Oil Recovery and CO<sub>2</sub> Sequestration**

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Mixtures of Carbon Dioxide (CO<sub>2</sub>) with medium and heavy hydrocarbons can develop complex phase behavior patterns. One of the most interesting patterns that are observed in CO<sub>2</sub>-Oil mixtures relates to barotropic behavior. This consists in a density inversion at ranges of temperature and pressure that are commonly found in industrial applications such as refrigerant-lubricant systems as well as reservoir applications. Petroleum fluids are extremely complex owing to their large range of molecular structure and sizes. The large degree of asymmetry between the compounds found in the heavy fraction of reservoir hydrocarbons and a light fluid such as CO<sub>2</sub> is likely to cause complex phase behavior patterns including barotropic behavior. One of the most efficient and promising technologies related to enhanced oil recovery (EOR) is based on CO<sub>2</sub> injection, which in light of the potential for barotropic inversion, might also be an excellent option for CO<sub>2</sub> sequestration. In this work we study the feasibility of taking advantage of the complex phase behavior present in CO<sub>2</sub>-Oil mixtures for the development of an EOR process that may simultaneously achieve highly efficient CO<sub>2</sub> sequestration.