

## Capture of CO<sub>2</sub> From Natural Gas Using Modified Imidazolium Ionic Liquids

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**Abstract :** Natural gas (NG) is considered one of the most essential global energy sources. NG fields are often far away from the market, and a long-distance transporting pipeline usually is required. Production of NG with high content of CO<sub>2</sub> leads to severe problems such as equipment corrosion along with the production line until refinery. In addition to a high level of toxicity and decreasing in calorific value of the NG. So it is recommended to remove or decrease the CO<sub>2</sub> percent to meet transport specifications. This can be reached using different removal techniques such as physical and chemical absorption, pressure swing adsorption, membrane separation, or low-temperature separation. Many solvents and chemicals are being used to capture carbon dioxide on a large scale; among them, Ionic liquids have great potential due to their tunable properties; low vapour pressure, low melting point, and sensible thermal stability. In this research, three modified imidazolium ionic liquids will be synthesized and characterized using different tools of analysis such as FT-IR, <sup>1</sup>H NMR. Thermal stability and surface activity will be studied. The synthesized compounds will be evaluated as selective solvents for CO<sub>2</sub> removal from natural gas using PVT cell.

**Keywords :** natural gas, CO<sub>2</sub> capture, imidazolium ionic liquid, PVT cell

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