

Mass Transfer from a Bubble in a Vertical Pipe

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Mass transfer from a bubble is governed by many factors such as bubble size, bubble shape, fluid properties, the presence of solute such as surfactant and electrolyte, and the presence of chemical absorption. A review of our experimental and numerical studies on the dissolution of single carbon dioxide bubbles in a vertical pipe will be made with special attention to effects of interfacial waves on surface renewal, a role played by surfactants with small and high Hatta numbers in the distribution of surfactant concentration on bubble surface, combined effects of surface active and inactive agents on the deterioration of mass transfer rate, and the mass transfer enhancement by chemical absorption, i.e., due to chemical reaction between carbon dioxide and sodium hydroxide.