Research Title: Dimension Ratio of Inducing Jet for Gas-Liquid Mixing
Researcher: Asst. Prof. Nuthvipa Jayranaiwachira
Faculty: Engineering   **Department:** Mechanical Engineering

Abstract

By injecting high velocity water as the primary fluid through the vertical down-flow ejector, the pressure around the ejector is dropped and entrained the surrounding air to mix with the liquid. In this work, effects of dimension ratios of liquid jet ejector to the air suction rate were investigated. The Computational Fluid Dynamics (CFD) models have been used to obtain the results and validated with experiments. Dimensions of ejector are studied in terms of nozzle diameter (Dj), diameter (Dc) and length (Lc) of mixing chamber, air inlet diameter (Da) and position of air inlet referred to nozzle edge (La). Both simulation and experimental results show that dimension ratios which give the highest air suction rate with every water flow rates are Dc=3Dj, Lc=6Dj, La=2Dj and Da=2.5Dj. According to these dimension ratios, the performance of the ejector in air inducing are 0.36, 0.31, 0.25 and 0.19 kg air/kW-h at water flow rates of 20.10, 18.67, 17.24 and 15.81 L/min, respectively.