**Temperature and solids effect on gas-liquid mass transfer**

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**Abstract**

The temperature and solids effect on the mass transfer characteristics in a bubble column was studied experimentally for the systems air/water/polyvinyl chloride (PVC) beads and air/water/expandable polystyrene (EPS) beads. Volumetric liquid side mass transfer coefficient, $k_{La}$, was determined under different temperatures (20, 25, 30, 35ºC), solid concentrations (up to 5%), gas flow rates (up to 7.4 mm/s) and solid sizes (549 and 210 μm for PVC beads, and 591 μm for EPS beads).

The results show that the temperature plays an important role on mass transfer phenomena, by increasing $k_{La}$ and, simultaneously, promoting the solids influence on $k_{La}$.

The presence of solids affects negatively $k_{La}$ being this effect more pronounced for the largest particles (PVC case). In addition, a decrease in $k_{La}$ occurs when the solid loading increases (observed in both cases, PVC and EPS).

Comparing the PVC and EPS effects on $k_{La}$, it can be concluded that physical and chemical properties of solids are important parameters to be taken into account on this kind of studies.

An empirical correlation for $k_{La}$ on the experimental variables was developed.