



Use of metal mesh to increase absorption efficiency of volatile organic compound in microchannel

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Volatile organic compounds (VOCs) emissions are concerned that it can cause environmental problems and public health. In order to reduce the volatile organic compounds emissions, the absorption is an effective method to reduce VOCs emission because it provides a high surface area, high capacity, and low operating costs. In this work, microchannel, thickness 250 μm , was applied to increase mass transfer and interfacial area between gas and liquid solvent. Moreover, stainless steel mesh is applied to allow gas and liquid solvent contact without dispersion of one phase into the other. The stainless steel mesh size were varied by using stainless steel mesh number 100, 200, and 300. Toluene was used as a representative of VOC and vegetable oil was used as a liquid solvent. It was found that gas and liquid solvent were completely separated at low gas flow rate and the removal efficiency of toluene up to 95 % in microchannel. In addition, the removal efficiency of toluene was decreased with decreasing size of stainless steel mesh and liquid flow rate. Moreover, mass transfer coefficient will be reported.

Keywords: Volatile organic compound, VOC, Absorption, Microchannel