

Generation separation and reactions of ethyl diazoacetate using integrated microfluidic system

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An integrated microfluidic system for multiple reactions and separations of hazardous ethyl diazoacetate (EDA) is presented. Combined for the integration are: droplet technique for liquid-liquid and/or gas-liquid separation and in-situ generation of toxic reagent, dual channel membrane technique based on a cheap polymeric microseparator for liquid-liquid separation, and capillary microreactor for cascade reactions in a sequential and continuous manner. The novel safe microfluidic droplet approach allows real time extraction of EDA from acidic reaction mixture. This integrated microfluidic approach not only allows safer and more efficient manipulation of hazardous and explosive EDA but also allows much improved production of fine chemicals.