

Vapor-Liquid equilibrium experiment data for screening novel amine solvents

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Aqueous amine absorption is a promising CO₂ capture process for coal-fired power plants. Existing solvents for using its process are Monoethanolamine(MEA), Methyl-diethanolamine(MDEA), and piperazine derivatives. But, its amine solvents had problems that are a lot of regeneration heat at stripper and low absorption rate at absorber. In order to develop an innovative solvent overcoming these problems, solvent screening tests are needed. Among solvents screening tests, vapor-liquid equilibrium(VLE) data are used predictions for regeneration heat and equivalent work. For achieving VLE data rapidly, we designed continuous stirred tank reactor(CSTR) that is needed a little quantity of solvent(about 30ml). I conducted this experiments about many new solvents(KHU series) and achieved VLE data. On the basis of these VLE data, I predicted regeneration heats and equivalent works and calculated CO₂ absorption rates about new solvents.