

Liquid-Liquid Mass Transfer Coefficient Determination Educational Pilot Plant

Item Number: LPK-YYCZ



Introduction

This bench-scale educational pilot plant for liquid-liquid mass transfer coefficient determination offers precise control of phase boundary, temperature, and agitation, enabling hands-on study of transport phenomena and unit operations in chemical engineering labs for teaching.

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Feature / Module	Specification / Description	Corresponding Academic Concepts
Contacting Vessel	Borosilicate glass cylinder with a fixed, measurable interfacial boundary	Phase boundary determination; interfacial area calculations
Agitation System	Dual independent variable-speed DC motors with digital rpm displays	Convective mass transfer; turbulence and Reynolds number influence
Temperature Control	Constant-temperature water bath with external circulation pump	Thermal effects on diffusivity and solute solubility
Experimental Module 1	Determination of individual and overall liquid-liquid mass transfer coefficients	Two-film theory; interphase mass transfer resistance
Experimental Module 2	Kinetic study of concentration changes over time under constant agitation and temperature	Transient mass transfer; concentration-time curves
Experimental Module 3	Demonstration of liquid-liquid extraction principles	Phase equilibrium; partition coefficients; solvent extraction design