

Material transfer



Component
École Nationale
Supérieure
d'Électrotechnique
d'Électronique

In brief

- > **Amety's Code:** N9EM15A
- > **Open to exchange students:** No

Presentation

Objectives

Give students the tools they need to model material transfer phenomena.

Description

Introduction: Process schematization, Role of matter transfer in the process, Classification of matter exchangers.

Definition of tools: Molecular diffusion, Knudsen diffusion, Determination of diffusion coefficients in gas, liquid and solid phases, Continuity laws.

Transfer in one phase (transient and steady state, laminar flow), Numerical applications (5 exercises).

Structure of the transfer coefficient, Influence of transfer intensity on the transfer coefficient, Obtaining transfer coefficients, Some examples of correlations.

Material transfer between phases (Film model, Double film theory, Transfer coefficients between phases, Penetration theory).

Introduction to film, bubble, drop and particle mass exchangers.

Notions common to mass exchangers (Expression of flow rates and flows, Exchange potential difference diagram, Global, partial and differential balances, number and height of transfer units).

Sizing method.