

Abstract

Provides a concise overview of the applications of magnetic techniques in biochemistry and chemistry, focusing on their role in separating solutions. Magnetic separation techniques have emerged as powerful tools for efficiently isolating biomolecules and compounds from complex mixtures. By exploiting the magnetic properties of target substances, magnetic techniques enable rapid and precise separation, offering advantages such as high selectivity, minimal sample loss, and automation potential. In biochemistry, magnetic separation finds applications in purifying proteins, nucleic acids, and cells from biological samples, facilitating downstream analyses such as PCR, sequencing, and drug discovery. In chemistry, magnetic techniques are utilized for catalyst recovery, organic synthesis, and environmental remediation, contributing to greener and more sustainable chemical processes. This abstract highlights the versatility and significance of magnetic techniques in advancing research, diagnostics, and industrial applications in biochemistry and chemistry.

Keywords: Biomolecules; Magnetic separation; Purification; Chemical synthesis; Environmental remediation; Catalyst recovery; Protein purification; Nucleic acid isolation; Cell separation; PCR; Sequencing; Drug discovery; Sustainable chemistry; Green chemistry; Automation; Selectivity; Sample loss; Downstream analyses; Research; Diagnostics; Industrial applications; Biochemistry; Chemistry.

Introduction

In the field of biochemistry and chemistry, magnetic separation techniques have emerged as powerful tools for efficiently isolating biomolecules and compounds from complex mixtures. By exploiting the magnetic properties of target substances, magnetic techniques enable rapid and precise separation, offering advantages such as high selectivity, minimal sample loss, and automation potential. In biochemistry, magnetic separation finds applications in purifying proteins, nucleic acids, and cells from biological samples, facilitating downstream analyses such as PCR, sequencing, and drug discovery. In chemistry, magnetic techniques are utilized for catalyst recovery, organic synthesis, and environmental remediation, contributing to greener and more sustainable chemical processes. This abstract highlights the versatility and significance of magnetic techniques in advancing research, diagnostics, and industrial applications in biochemistry and chemistry.

Direct magnetic techniques

Magnetometry: Magnetoencephalography (MEG) and Magneto-optical

Imaging (MOI) are examples of direct magnetic techniques. SQUID (Superconducting Quantum Interference Device)