

Industrial Consultancy & Sponsored Research (IC&SR)

A Method for Simultaneous Synthesis and Separation of Nanoparticles in an Aqueous Two-phase System

IITM Technology Available for Licensing

Problem Statement

- Current methods **lack scalability** for the **large-scale nanoparticle synthesis** due to **inefficient separation techniques**.
- Traditional synthesis methods using organic solvents **posses environmental risks**, **necessitating greener alternatives**.
- Nanoparticle synthesis efficiency is **highly dependent on pH**, requiring precise control within a specific range for optimal results.
- Hence, there is a need for a **method that integrates synthesis and separation** to streamline nanoparticle production.

Technology Category/ Market

Category: Micro & Nano Technologies

Industries: Chemicals, Electronics, Energy, Pharmaceuticals, Nanotechnology

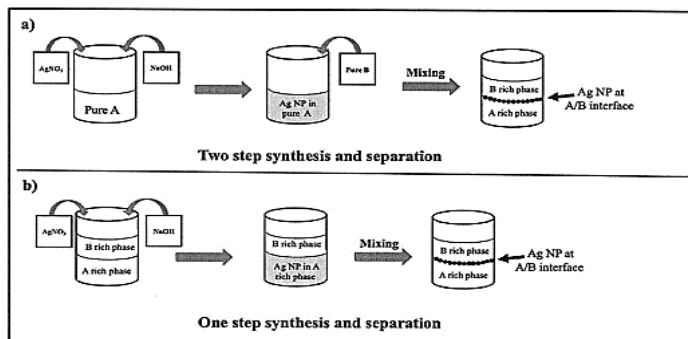
Applications: Drug Delivery, Catalysis, Photonics, Biomedical Imaging, Nanoparticle Synthesis and Separation

Market: The global nanoparticle formulation market size is estimated to grow from **USD 5.1 billion in 2023** to **USD 15.1 billion by 2035**, representing **9.4% CAGR** during **2023-2035**.

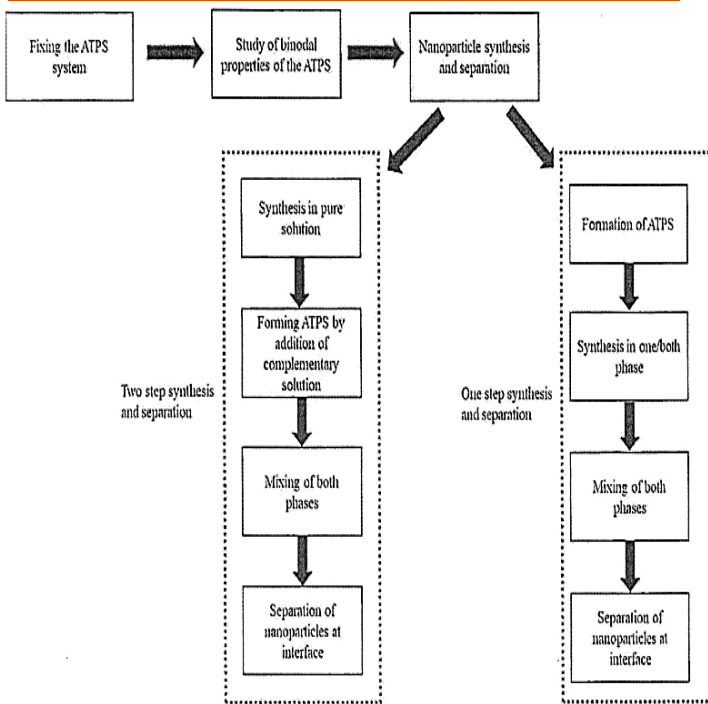
Technology

The instant technology disclosure refers to a **method for synthesizing and separating nanoparticles** using an aqueous two-phase system. **FIG 1:** shows a schematic diagram of experimental procedures for

- Two step synthesis and separation**
- one step synthesis and separation of silver nanoparticles.**



Method



Key Features / Value Proposition

- Efficiency:** Simultaneous synthesis and separation streamline the nanoparticle production process, enhancing overall efficiency.
- Scalability:** The method is conducive to large-scale production, meeting industrial demands.
- Environmental Friendliness:** Elimination of organic solvents reduces environmental impact, aligning with sustainability goals.
- Precise Control:** pH control within the optimal range ensures consistent and high-quality nanoparticle synthesis.

Intellectual Property

IITM IDF No: **1882**; IN IP No: **486603 (Granted)**

TRL (Technology Readiness Level)

TRL - 4, Experimentally validated in lab.

Research Lab

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