Selective Manipulation of Magnetically Barcoded Materials

Tech ID: 34073 / UC Case 2020-315-0

BRIEF DESCRIPTION

This technology enables precise, selective manipulation of magnetically barcoded materials, distinguishing them from background magnetic materials

FULL DESCRIPTION

The invention is a method that employs electromagnetic systems to selectively manipulate materials encoded with magnetic barcodes. These barcodes consist of layers of magnetic anisotropy, which can be selectively engaged by matching them with spatiotemporal magnetic fields. This selective manipulation mimics biological lock-key interactions, allowing for highly specific operations in environments filled with potential magnetic interference.

SUGGESTED USES

- Cell separation and targeted drug delivery systems in biomedical engineering.
- Development of advanced magnetic valves and motors for industrial applications.
- Creation of micro- to macro-scale magnetic interfaces for various fields, including robotics and material sorting.

ADVANTAGES

- High selectivity in magnetic manipulation, overcoming the limitations of current magnetic systems.
- Ability to perform complex operations by distinguishing specific materials from a background of magnetic tags.
- Potential for application in a wide range of scales, from micro to macro.

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	12,347,614	07/01/2025	2020-315

RELATED MATERIALS

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OTHER INFORMATION

CATEGORIZED AS

- **Materials & Chemicals**
  - Other
- **Medical**
  - Delivery Systems
  - Research Tools
  - Screening
- **Research Tools**
  - Screening Assays
- **Engineering**
  - Other
  - Robotics and Automation

RELATED CASES

2020-315-0

» Hajiaghajani, A., et al. Tseng, P. (2019). Selective Manipulation and Trapping of Magnetically Barcoded Materials. Adv. Mater. Interfaces.

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