



## Colloidal Crystallization via Applied Fields

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**Summary:** The use of external fields to produce three-dimensional crystals of colloid-sized matter

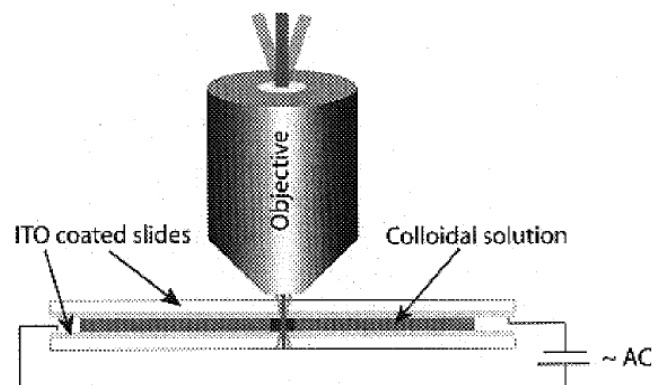
**Description:** This invention relates to a method that uses electric fields to induce colloidal crystallization from isotropic colloidal suspensions. This method relies on the application of an electric field across a narrow gap filled with concentrated colloidal suspension. At gap widths significantly larger than the colloid, lateral variations in the electric field are used to induce dielectrophoresis and the formation of the three-dimensional ordered colloidal crystals. The three-dimensional colloidal crystals formation is fully reversible. Upon removal of the field, the ordered structure melts into an isotropic colloidal suspension. Upon reapplication of the field, crystals quickly reform. The crystals are mechanically quite stable and also exhibit excellent optical properties. This method can also be used for the crystallization of proteins that cannot be crystallized via standard approaches.

### Main Advantages of this Invention

- Formation mechanism is reversible and occurs over short time scales
- Nucleation of crystals can be carefully controlled

### Potential Areas of Application

- Diffraction based sensors
- Photovoltaics
- Medical research



**ID number:** 4001

**Publication:** T. Gong *et al.*, *Langmuir* 2003, 19, 5967-5970.

**Intellectual Property Status:** US 7,704,320

**Opportunity:** We are seeking an exclusive or non-exclusive licensee for marketing, manufacturing, and sale of this technology.

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