

High Rate Electric Field Driven Nanoelement Assembly on an Insulated Surface

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Description

In prior art, two major techniques are used for assembly of nanoelements. The first one is an electrophoretic assembly involving high rate assembly of nanoelements on a conductive substrate. The second one involves assembly of nanoelements on a conductive or non-conductive substrate but at a much slower rate, being limited by diffusion. **This novel process enables a high rate directed assembly of nanoelements on any substrate regardless of conductivity.**

Value Proposition

The process:

- Doesn't require a surface treatment and further involves an easy fabrication of nanostructures as compared to prior art techniques
- Has high versatility, which can be controlled through various parameters
- Enables an assembly of different kinds of nanoelements
- Involves a precise assembly of nanoelements with proper pattern geometry
- Involves use of an electric field to overcome the diffusion limitation and to drastically enhance the given assembly rate
- Allows for an assembly of nanoelements at a higher pulling speeds (2-3 orders of magnitude)
- Allows for a significant reduction in the overall assembly time from hours to minutes
- Assembles nanoelements having potential application in high rate development of nanoscale devices such as new electronic devices, sensors, photonic crystals, and advanced batteries

Intellectual Property Status

PCT Application PCT/US2011/062395
Pending Utility Application 13/990,388

License Status

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