

# Oriented Electrospinning Nanofiber Fabrication Micro/Nano 3D Printer



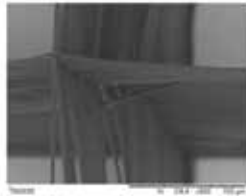
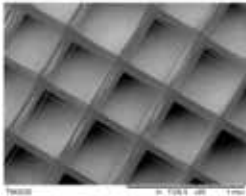
EPCC / PRODUCTS / APPLICATION / SOFTWARE / ACCESSORIES / CONSUMABLES / SERVICES

**Analytical Technologies Limited**

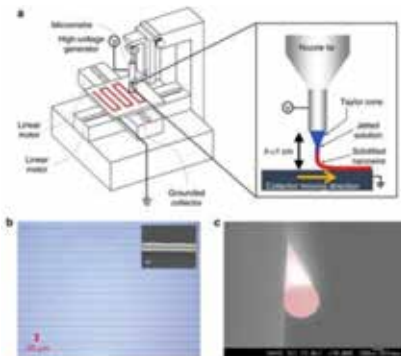
An ISO 9001 Certified Company

[www.analyticalgroup.net](http://www.analyticalgroup.net)

- Printing resolution : minimum 50nm;
- Nanofiber highly oriented and controllable;
- International R & D team pioneering technology;
- Exclusive patented technology;
- Micro/nano manufacture excellent tools.

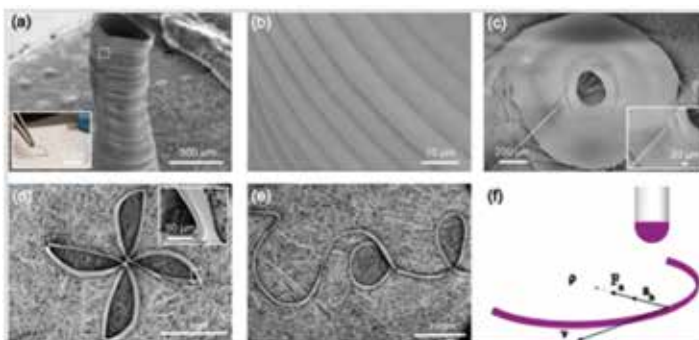


## ▶▶ Principle of Near-Field Electrospinning

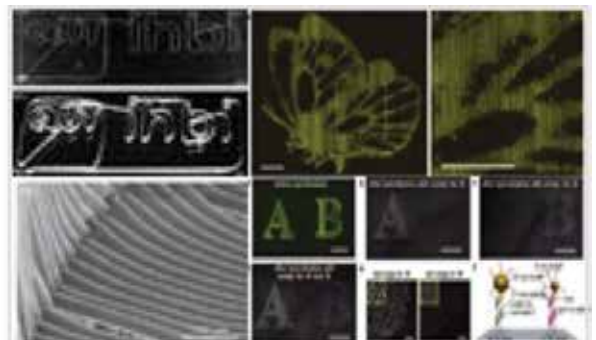


In 2006, the core members of the ATL's innovative R&D team developed near-field electrospinning technology. They demonstrated in the electrospinning process, when the distance between collector and nozzle is controlled in the range of 0.5-5mm, the high-precision oriented nanofibers can be prepared assisted with precision motion control. This kind of manufacturing technology termed near-field electrospinning.

## ▶▶ Near-Field Electrospinning Technology Samples



3D Scaffold



Complicated Patterns

## ►► Near-Field Electrospinning Technology

### 1. Solution Near-Field Electrospinning

During solution near-field electrospinning process, the printing materials are prepared into solution, fibrous pattern and orientation fibers will be printed with electric field. Solution near-field electrospinning typically produces fibers diameter in the range of 50nm - 20um, and it is suitable for various material to produce high precise nanofiber patterns.

### 2. Melt Near-Field Electrospinning

Melt near-field electrospinning is a kind of near-field electrospinning. The printing materials are heated and melted, assisted with the electric field, fibers with a diameter range of 500nm-50um can be prepared. It is highly advantageous within the field of three-dimensional biological tissue engineering scaffolds for its thinner fiber diameter.

## ►► Near-Field Electrospinning Machine Parameters

- High voltage power supply: 0-30kv adjustable;
- Solution spinning needle: solution supply volume minimum 10  $\mu$ /h;  
Melt spinning needle : (1) temperature range: 0-300 °C adjustable;  
(2) precision pneumatic extrusion;
- Environment temperature range: room temp up to 50°C adjustable;
- Collection platform: (1) printing area: 150 \* 150mm;  
(2) motion platform speed: 0-200mm/s adjustable;  
(3) Printing resolution:  $\leq$  50nm;
- Z axis: (1) 0-80mm adjustable;  
(2) resolution:  $\leq$  50nm;
- Printable materials: PEO, PVA, PLA, PCL, PLGA, chitosan, sodium, alginate, collagen, hydroxyapatite, PVDF and other hundreds of organic or inorganic materials;
- User-defined patterns printable;
- 3D structure printable;
- Optional: collector temperature controllable; multi-needle device.

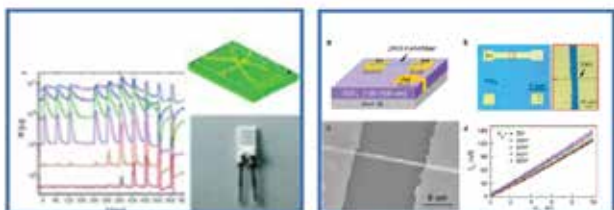
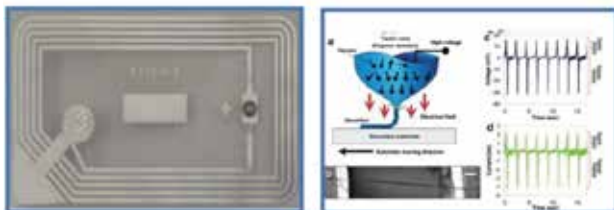
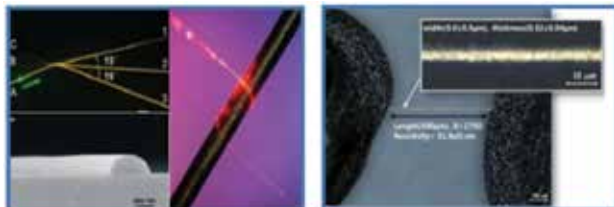
## ►► Near-Field Electrospinning Application

### 1. Tissue Regenerative Repair

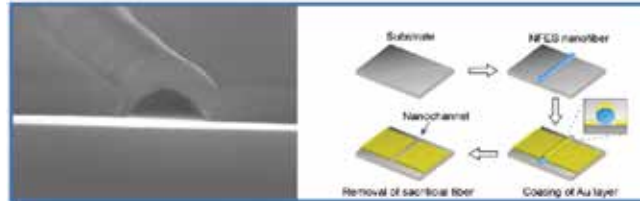
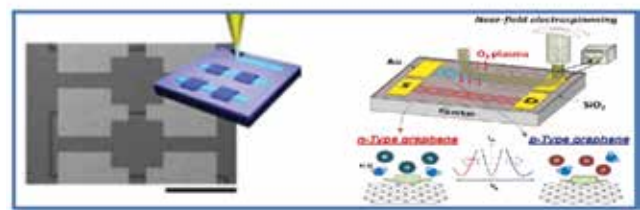
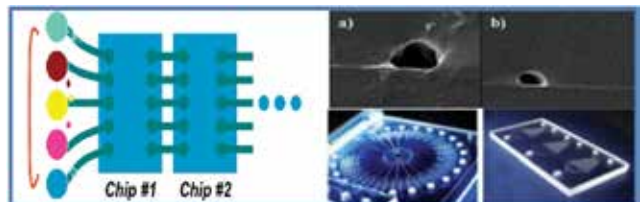
- Hernia repair
- Skin repair
- Periodontal repair
- Cardiac repair
- Tendon repair
- Neural repair
- Vascular repair
- Drug test
- Durai repair
- Cartilage repair
- Canthus tissue repair
- Abdominal diaphragm repair
- Bone defect repair



### 2. Electronic Information



### 3. Micro/Nanmo Processing





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**HPLC Servicing** :HPLC Servicing : We have team of service engineers who can attend to any make of HPLC promptly @the most affordable cost.

**Trainings** :We also take up preventive Maintenance to reduce downtime of HPLC's Trainings.

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**Validations** :Validations :We have protocols for carrying out periodic Validations as per GLP/GMP/USFDA norms.

**Instruments** :Instruments :We offer instruments/Renting Services Modules like pumps,detector etc. on Rent.



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## Regulatory compliances



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2. Improving quality of life by offering YOGA Training courses, Work shops/Seminars etc.

3. ANALYTICAL FOUNDATION aims to DETOXYFY human minds, souls and body by means of yoga, Meditation, Ayurveda, Health Care, Awards, Media, Events, Camps etc.

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