



### Funding Requirements

\$3-million investment

### Development Stage:

Late stage R&D/Early stage manufacturing

### Milestones

- Seed Financed: \$500K
- One key patent issued, and one is filed
- Early-adopter engagement and sales
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### Investment Highlights:

- Low/no regulatory requirements
- Proven technology
- Significant breadth of applications and markets

### Applications:

- Nano/micro scale Imaging
- Industrial Inspection (e.g. LED, solar cell, memory devices)
- Advanced Manufacturing
- Sensors
- Atomic Manipulation

### Industries:

- Semiconductor
- Biotechnology
- Advanced Material
- Medical Research
- Pharmaceuticals

## Company's Overview:

Nanodevice Solutions (NDS) is an electronic and nano-manufacturing company that was incorporated in 2014. NDS focuses on manufacturing of a disposable component of a widely used characterization instrument. The instrument is used by many different industries and researchers around the globe. This silicon based consumable (AFM probe) is very sharp (one atom at the tip), but when it is brought into contact with a specimen surface, it will become dull or contaminated. Hence it needs to be replaced regularly, which leads to a sizable market. The market resembles the razor and blades model.

**Technology:** NDS' unique manufacturing method utilizes a variety of top-down and bottom-up nanofabrication methods that are non-conventional. The process is easily transferable to large scale production while it improves the quality of the products.

### Markets: (USD)

*Industrial inspection/fault detection, R&D imaging, and characterization – \$516M - \$750M in 2017*

Because AFM tips are consumables that need to be replaced frequently when broken, worn out or contaminated, the annual global market for AFM tips is high and is reaching \$750 million as of 2017 (BCC RESEARCH, 2013)

*Educational market – \$250M - \$380M in 2020*

Adaptation of AFM instrument by the secondary schools in Asia is considered an emerging market and is proliferating due to the new mandates set by the Chinese government to teach nanotechnology to the students from an early age.

### Intellectual Property:

The IP portfolio consists of two (2) distinct and independent patents. The first patent has been granted and filed in China (Utility patent) and USA. The second patent is a US provisional.

### Team:

**Mr. Babak Shokouhi** is the Founder and CEO of Nanodevice Solutions (NDS) with years of hands-on experience with AFM machine. MR. Shokouhi holds MASc. degree in electrical and computer engineering from the university of Waterloo. He has been featured by CMC Microsystems as a successful young nano- entrepreneur in Canada in 2015.

**Prof. Bo Cui** is the co-founder of NDS and leads the technical initiatives at NDS. He received his Ph.D. from Princeton University and has joined ECE department at the University of Waterloo in 2008. He leads the Waterloo Nanofabrication Group at Waterloo and is expert in the fabrication of nanostructures.



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### 融资需求:

- 300 万

### 发展阶段:

- 研发后期/早期阶段
- 制造业

### 里程碑:

- 50 万启动资金
- 已有核心专利一项，一项在审
- 前期采购以及销售

### 投资亮点:

- 无产业监管标准
- 具备产业化的技术
- 极大的应用和市场前景

### 应用:

- 微纳米成像
- 工业检测(如, LED、太阳能电池、储存设备)
- 高端制造业
- 传感器
- 原子操控

### 工业:

- 半导体
- 生物科技
- 先进材料
- 医学
- 制药

# 公 司 简 介

Nanodevice Solutions (NDS)成立于 2014 年是一家集微电子、微纳加工技术，咨询服务于一体的新型技术公司。公司主营业务为显微镜探针、检测仪器的零部件的研发和生产。例如，被广泛应用于全球各个行业的微纳米技术检测的原子力显微镜探针。这种硅基耗材（AFM 探针）非常锋利（具有原子尺度级别），当它长时间与样品表面接触时，会磨损或者被污染。因此，这类探针属于极度易耗品，需要定期更换，从而具有极大的市场空间。

**技术优势:** NDS 采用了非常规的自顶向下和自下而上独特的制造方法。此外，此项技术还解决现有市场一根一根的制作技术瓶颈，我们的技术可以直接对整个硅片（4 英寸大约 400 根）的探针批量的进行加工，极大的降低了生产的成本，从而我们的技术具备大规模生产的前提。

### 市场容量: (加元)

**2017 年工业检测、失效分析、研发成像以及材料的表征 - \$516M - \$750M**  
AFM 探针是易耗品，所以在使用过程中出现破损，磨损或污染时即需要更换。具 2013 年 BCC 调查指出在 2017 年 AFM 的全球市场年度高达 7.5 亿美元。

### 普教市场- \$250M - \$380M (2020 年)

中国教育部提出建立“中小学纳米科技创新实验室”，旨在普及中小学生对我国纳米技术发展的认知教育。此外欧美国家也提出“High Schools Meet High Tech”均是向中小学教育普及纳米技术发展的认知教育。

### 知识产权:

知识产权组合由两（2）份不同独立专利组成。第一项专利已得到中国（实用新型专利）和美国的授权。第二项专利是正在审核中的美国专利。

### 团队:

**Babak Shokouhi**, 滑铁卢大学电气和计算机工程硕士，是 Nanodevice Solutions (NDS) 的创始人兼首席执行官，拥有多年 AFM 设备的使用经验。2015 年被加拿大 CMC Microsystems 评选为成功的年轻纳米企业家。

**崔波教授**, NDS 的联合创始人，NDS 的技术拥有者。崔教授博士毕业于普林斯顿大学，师从“纳米压印之父”周郁院士（美国），并于 2008 年加入了滑铁卢大学的欧洲经委会。崔教授是滑铁卢大学微纳加工中心主任，滑铁卢大学纳米制造课题组长，在微纳加工技术领域有 20 多年从业的专家。