



# Technical Approach

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## Tip-Assisted/Directed Gas Phase Deposition on insulating/conducting substrates

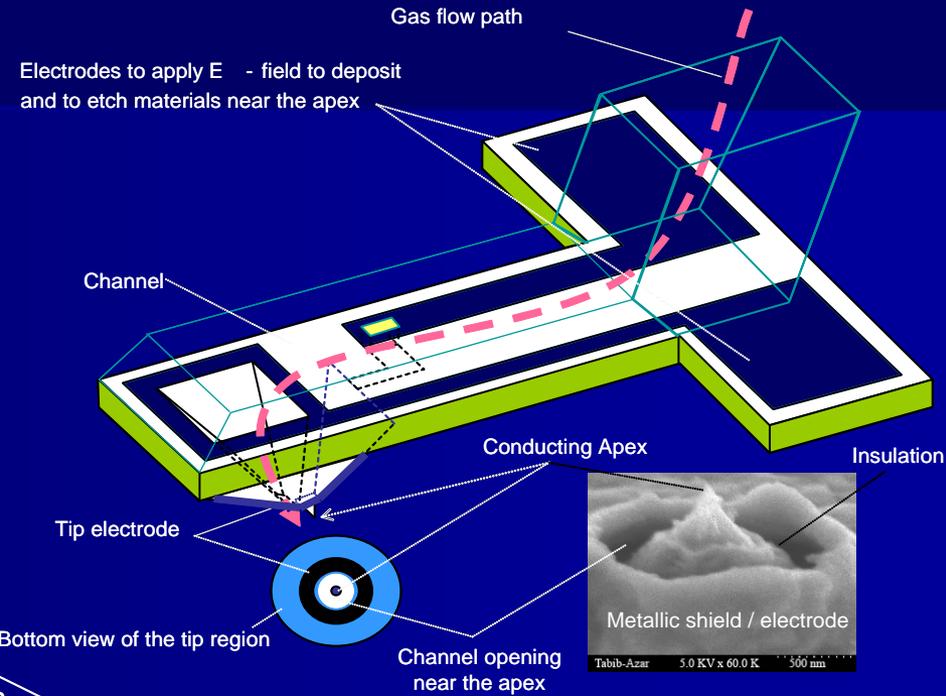
- Gas phase deposition:
  - Field-Assisted Activation of  $\text{SiH}_4 \rightarrow \text{Si}$
- One-dimensional Atomic Layer Deposition
  - AB from A/surface and B

## Tip-Induced/Directed Etching:

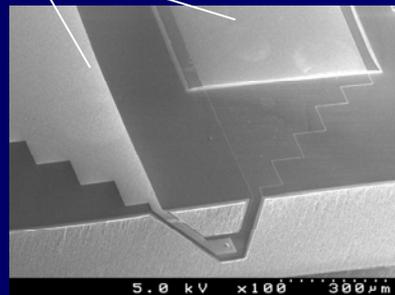
- Nano/Micro Plasmas (ions) - Electrostatic/tweezers
  - Electrons - Optics/Microwave
  - Reduction/Oxidation - Physical - chiseling
- 1D-ALD: Modify A/surface to direct AB

## Fabrication/Instrumentation of Tips

- Integrated piezoresistor position sensor
- Integrated piezoelectric actuator
- Integrated electrodes for "breaking" molecules for deposition
- Integrated electrodes for creating plasma to locally etch



## Waveguides to generate plasma



Insulator/semiconducting/metallic substrates can be used

