api technologies corp.

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An API Technologies Company

ATOMIC LAYER DEPOSITION CAPABILITIES BRIEF

API Nanotronics Introduces its Advanced Atomic Layer Deposition (ALD) capabilities from its NanoOpto Division. NanoOpto's ALD resources include *multiple batch systems* which can run several large area substrates in a single run with monolayer precision.

KEY FEATURES AND BENEFITS

Monolayer Control
- Precise material deposition
- Pinhole-free films
- Single layer sequential deposition

Conformality
- Not just "line of sight" deposition
- Coat deep trenches
- Coat pillars, vias, multiple structures
- Coat curved and "3D" materials
- Coat inside of thin tubes
- Single or dual sided wafer deposition

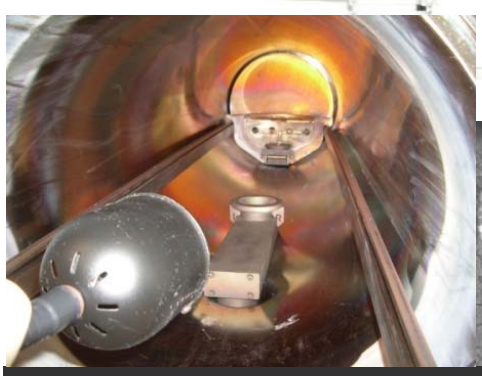
Large Reactor Batch Processing
- Multiple large substrates per run
- Fixturing for multitude of custom parts
- Up to 300 mm wafers possible

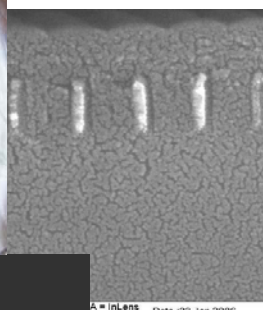
Nanolaminates
- Nanometer thickness alternating layers
- Designed film properties through multiple computer controlled layers

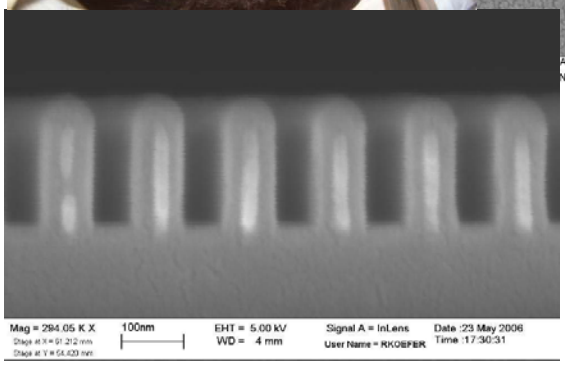
Materials Online Now:
- Al_2O_3
- SiO_2
- Ta_2O_5
- TiO_2
- ZnO
- Many others possible

Our ALD capabilities give our customers the utmost in controlled materials deposition combined with manufacturability and batch processing.

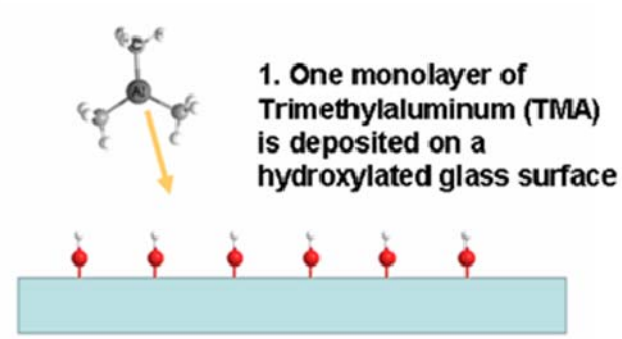
Ideal for many applications:
- Optics
- Sensors
- Medical
- Defense
- Semiconductor
- Energy storage
- Energy generation
- Biological
- Microlens arrays

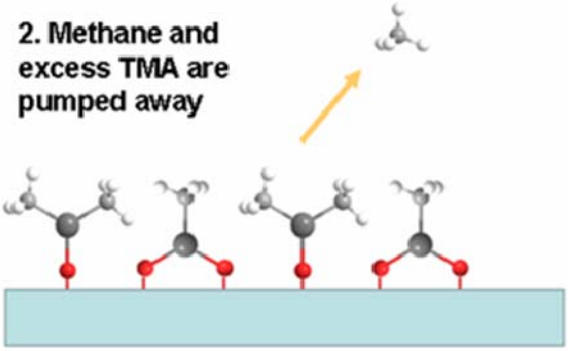


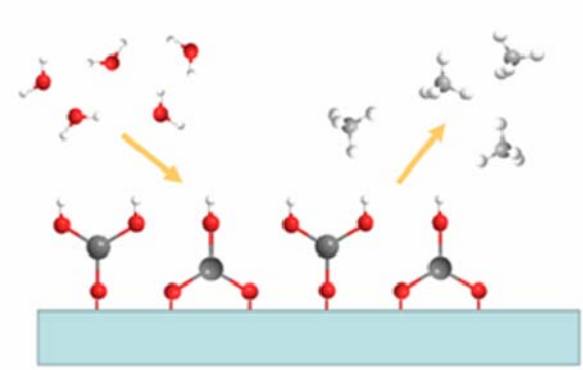




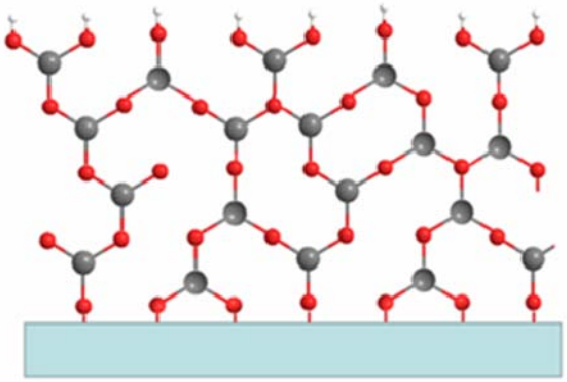
Example of ALD deposition: Aluminum oxide with TMA and water







3. Water is introduced. Converts adsorbed TMA to alumina. Methane and excess water are pumped away.



4. Multiple repetitions create compact, conformal alumina layer with single monolayer precision

Find out more about NanoOpto at:
www.nanoopto.com

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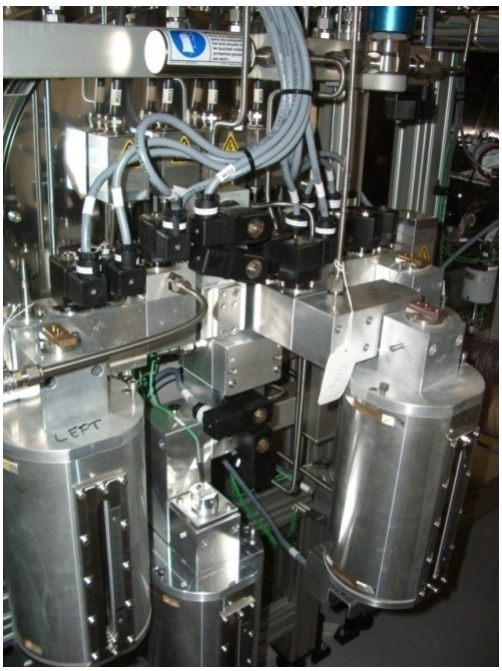

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