

Requirements

Injection Chamber

UHV chamber with one DN40CF port for ALI (facing the sample), and another for a pressure gauge (as close as possible to the sample plane).

Pumping

- Injection chamber:
Dry primary pump, $S > 5 \text{ m}^3/\text{h}$, $p_{\text{base}} \sim 10^{-2} \text{ mbar}$.
Turbomolecular pump, $250 \text{ l/s} < S < 700 \text{ l/s}$
- Pre-injection system:
Dry pump w/ gas-ballast, $S > 5 \text{ m}^3/\text{h}$, $p_{\text{base}} < 22 \text{ mbar}$

Pressure Measurement

- Injection chamber:
Pfeiffer PKR 261/251 (full range Pirani-Penning)
- Pre-injection system:
Pfeiffer APR 250 (direct piezo gauge)

Carrier Gas

Carrier gas cylinder with double-stage pressure regulator. Argon, purity >99%, recommended.

Control PC

PC running Windows v. 7 and above (32 or 64 bit)
Connection to control unit via USB.

Products

- ALI-DS001:
ALI Deposition System
- ALI-SCU001:
ALI Software & Control Unit Package
- ALI-PM001:
ALI Preparation Module (Customizable)

BihurCrystal

TECHNICAL SOLUTIONS AND EQUIPMENT FOR VACUUM
AND ULTRA-HIGH VACUUM APPLICATIONS

BihurCrystal



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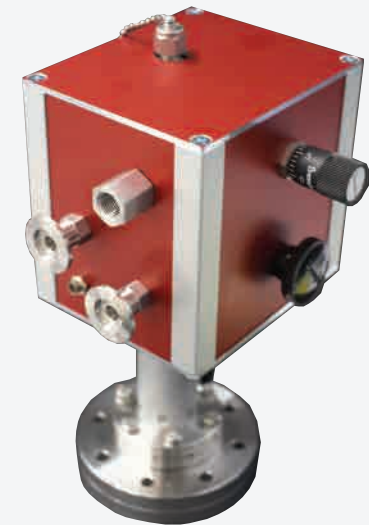
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ATOMIC LAYER INJECTION

Deposition in UHV from solution



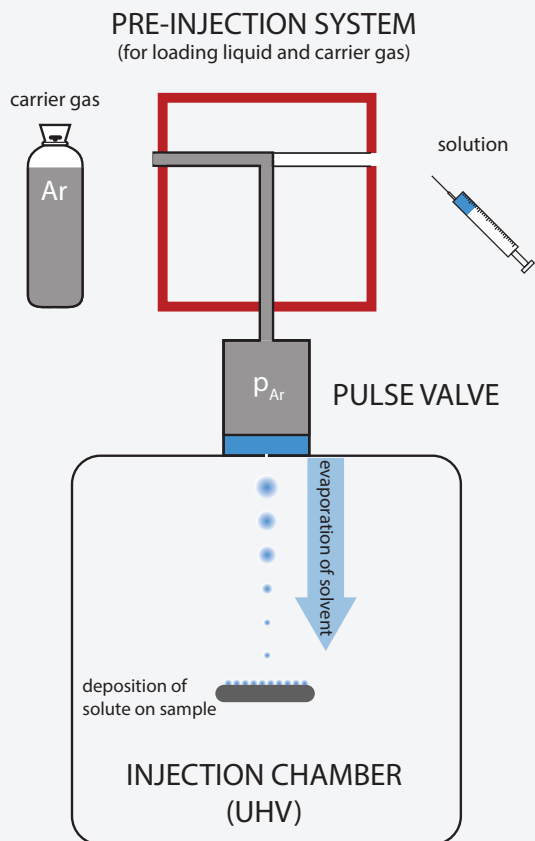
ALI-1000

A UHV deposition system from solution for large or fragile molecules.

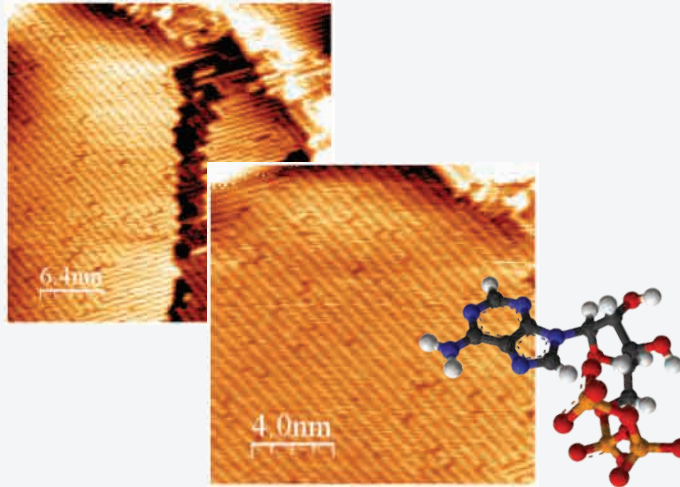
ALI uses a **pulse valve** to inject a small amount of the solution or colloidal suspension containing the material to be deposited.

A **pre-injection system** holds the solution at a desired carrier-gas pressure.

When the solution is pulse injected, it forms a spray. The solute travels within the microdrops, as the solvent evaporates, and is finally deposited on the sample.

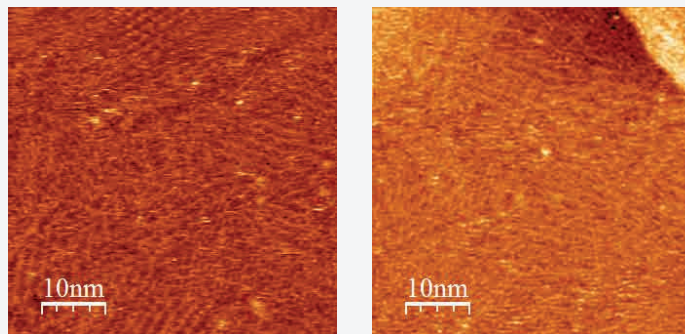


ATP on Cu(110)



Courtesy of Jesús M. Sobrado
Centro de Astrobiología (CSIC-INTA), Madrid, Spain

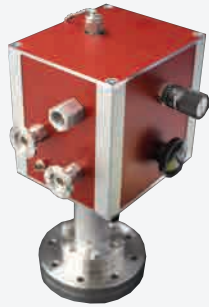
β -Carotene on Au(111)



Courtesy of Franz Himpsel and Celia Rogero,
NanoPhysics Lab, Centro de Física de Materiales (CSIC-UPV/EHU),
Donostia-San Sebastián, Spain

ALI's Features

- Deposit macromolecules, nanoparticles, etc from solution
- Ideal for delicate molecules that degrade during evaporation or sublimation!
- Pulses down to 1ms



ALI-DS001



ALI-SCU001

- User-friendly software interface

- Incorporates safety features to protect the vacuum system
- Also available:
Customized preparation modules

ALI-PM001

