



VINCI TECHNOLOGIES

UHV SOLUTIONS



FRANCE

IJL - DAUM

DAUM LAB BY VINCI

The technical platform consists in **28 ultra-high vacuum systems**, interconnected by the **70-meter long Vinci Technologies ultra-high vacuum transfer tunnel (Mecatrans)**, including a 30-meter section dedicated to technology transfer. It combines multi-material growth techniques with multi-dimensional analysis techniques for thin films

The research topics currently developed on the platform cover the following areas:

- Materials for spintronic: ferromagnetic, magnetic oxides, strong spin orbit coupling, topological effect, etc.
- Nanomaterials for optoelectronics, photovoltaics, etc.
- 2D materials: molecular, ultra-thin oxides, etc.
- Complex alloys and quasi crystals
- Functional materials: ternary oxides, Heusler alloys, etc.

Check out following videos:

Virtual platform

<https://youtu.be/iDSFus8ZjMQ>

https://youtu.be/7BK7rE60_PU



MULTI-SYSTEM PLATFORM

Equipment for developing thin layers:

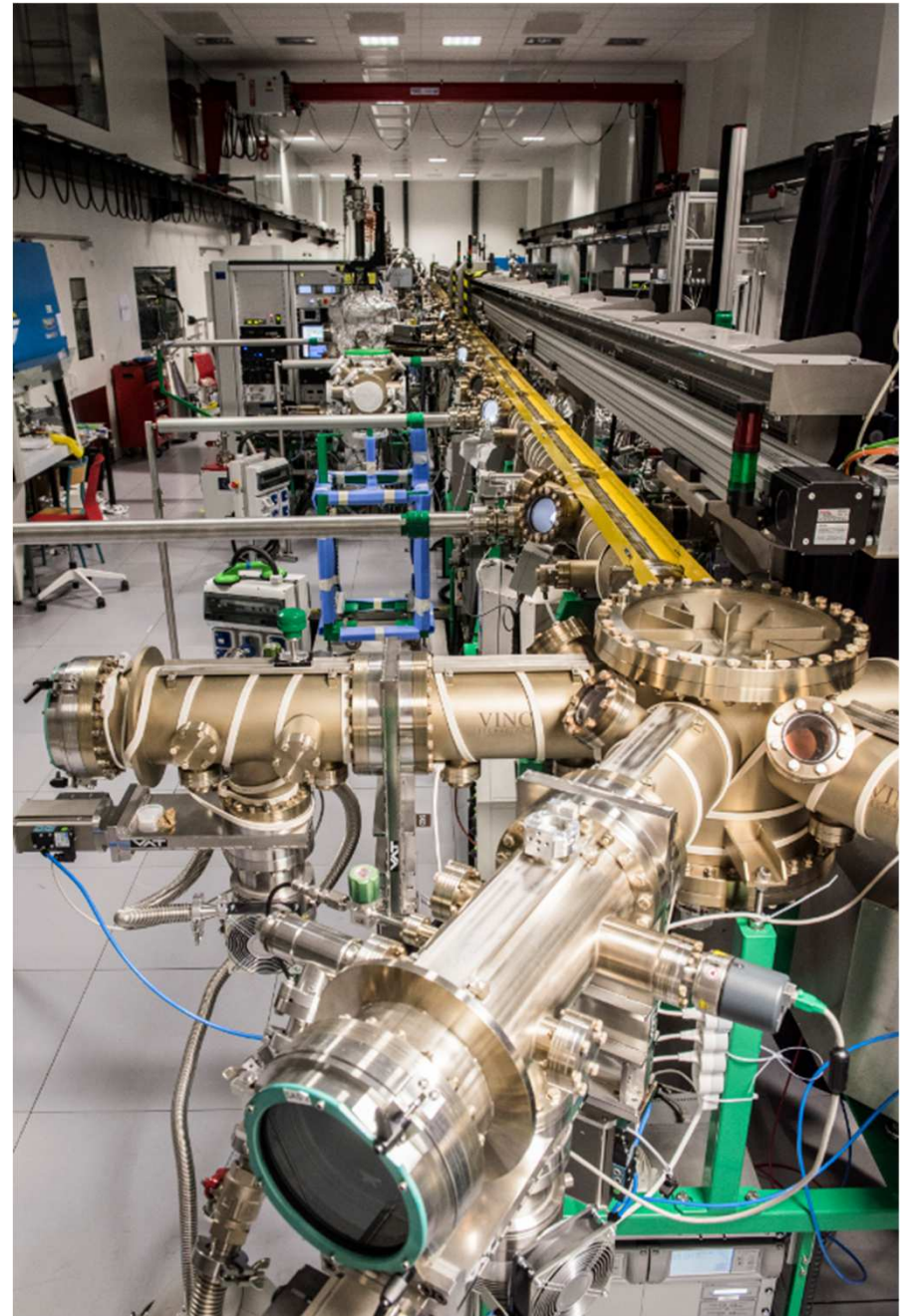
- 1 reactive Evaporation chamber : **from Vinci Technologies**
- 6 Sputtering: **4 from Vinci Technologies**
- 6 Molecular Beam Epitaxy MBE: **3 from Vinci Technologies**
- 1 Atomic Layer Deposition ALD: **Intro Chamber by Vinci Technologies**
- 1 Pulsed Laser Deposition PLD: **from Vinci Technologies**
- 1 Rapid Thermal Annealing RTA chamber: **from Vinci Technologies**

At each stage of their growth, these hybrid materials can be studied and characterized, while staying under ultra-high vacuum, by using different surface analysis techniques:

Equipment for surface analysis:

- Chemical: Spectroscopies (XPS, Auger, ARPES)
- Physical: Magneto-optical Kerr effect; Spectroscopies; Photo- and Cathode-luminescence
- Structural: Electron diffraction (RHEED, LEED); Microscopies (STM, AFM, SEM)

Confidential



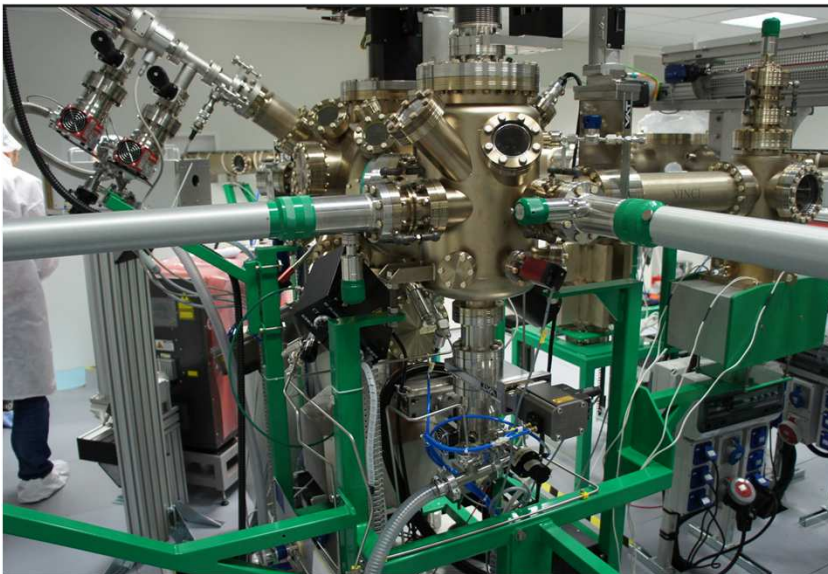
VINCI SYSTEM EXAMPLES



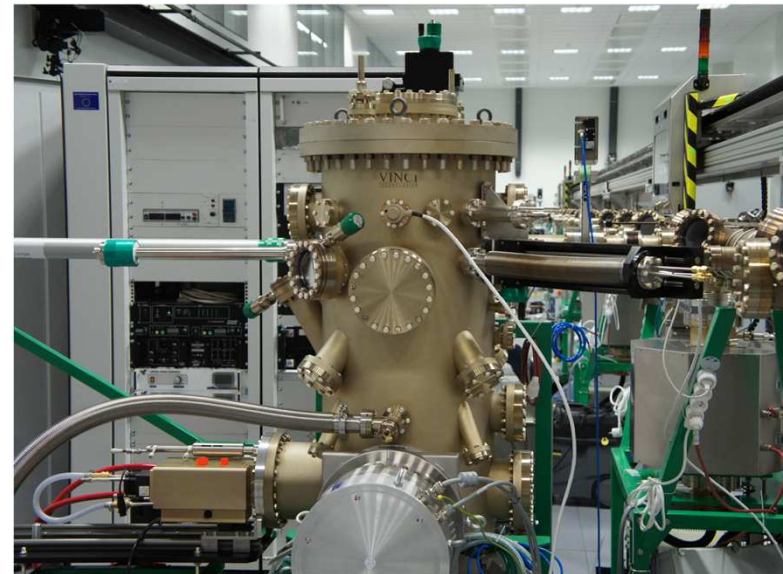
PVD-400 + PVD Industrial



Evaporator



Pulsed Laser Deposition



MBE - Organic



USA

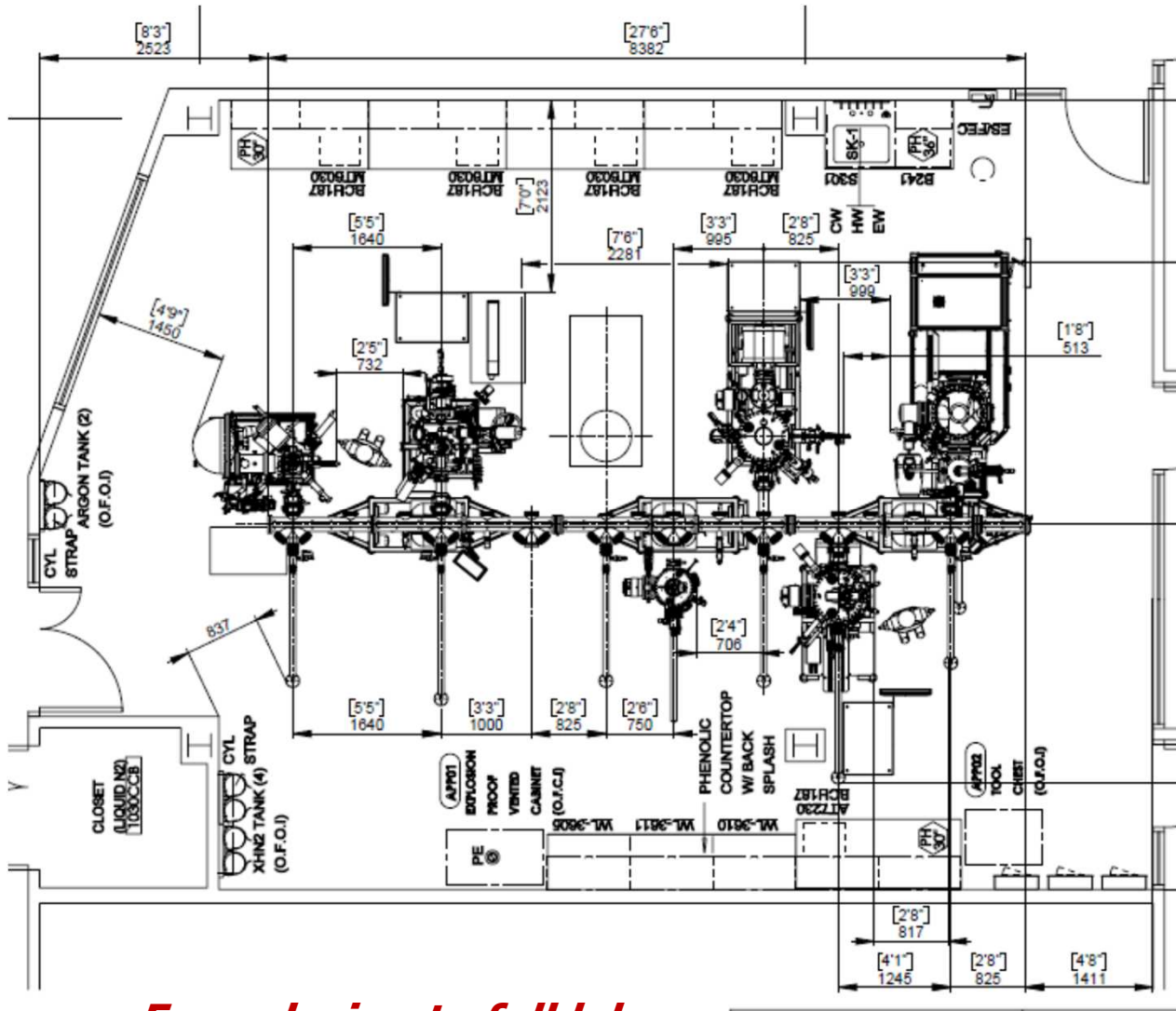
NYU - CQP

CQP LAB BY VINCI



LAB LAYOUT

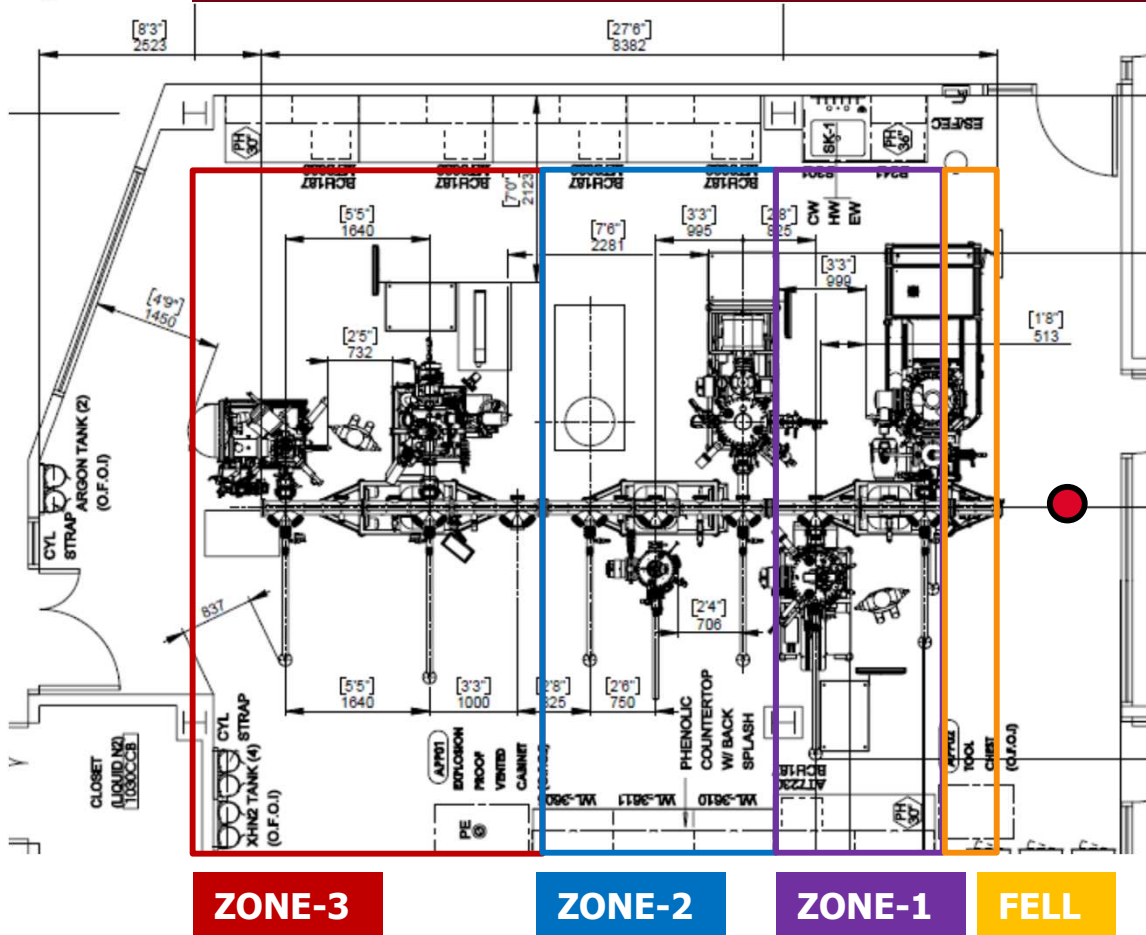
Project from 2016 to 2018: Tunnel 8.5 m with Fast Entry LL coupled to 6 systems



From design to full lab integration

Confidential

LAB BY ZONE



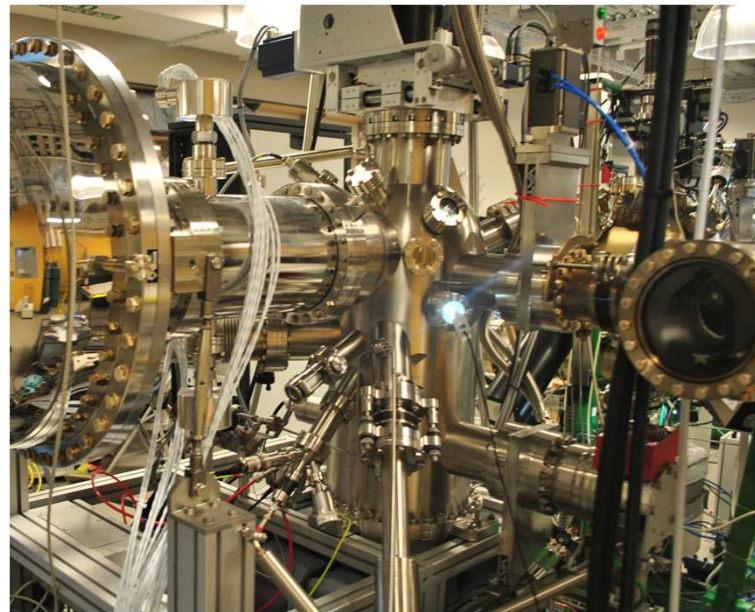
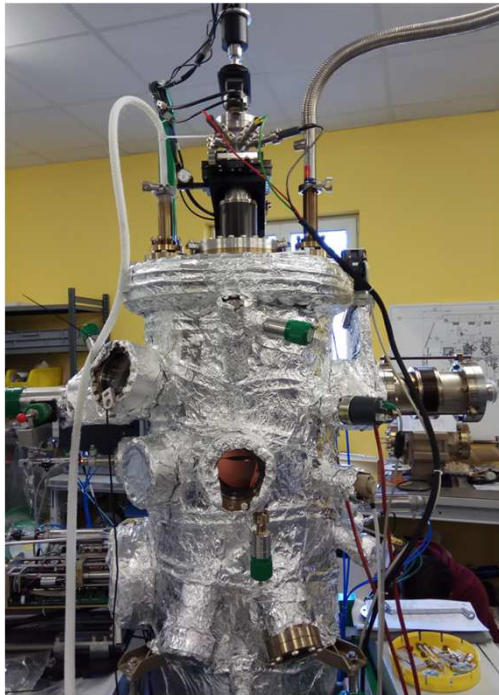
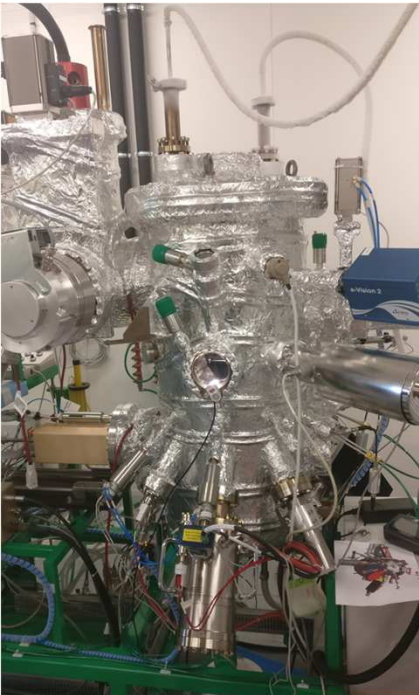
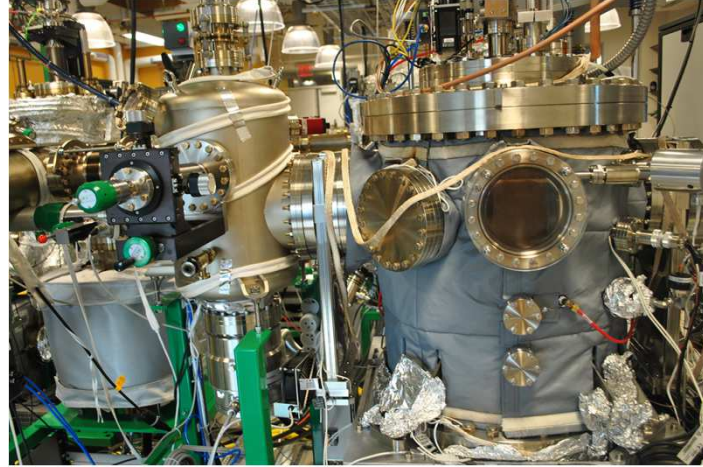
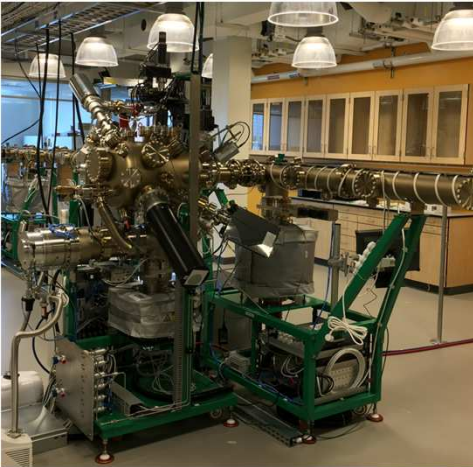
UHV Transport system: Vinci Technologies Linear Transfer Tunnel (Mecatrans) version for samples of 2"

Zone-1/ Fast Entry load lock with chariot for up to 12 samples/substrates

Zone-2/ PVD from **KJ Lesker** top view, Vinci Technologies growth system for metal contacts lower view

Zone-3/ Vinci Technologies MBE-2D epitaxial growth system top view, Vinci Technologies Preparation system for rapid thermal annealing lower view

Zone-4/ Vinci Technologies Pulsed Laser Deposition epitaxial growth system top view, **Scienta Omicron** ARPES analysis system lower view





ISRAEL

**WEIZMANN INST. OF
SCIENCE**

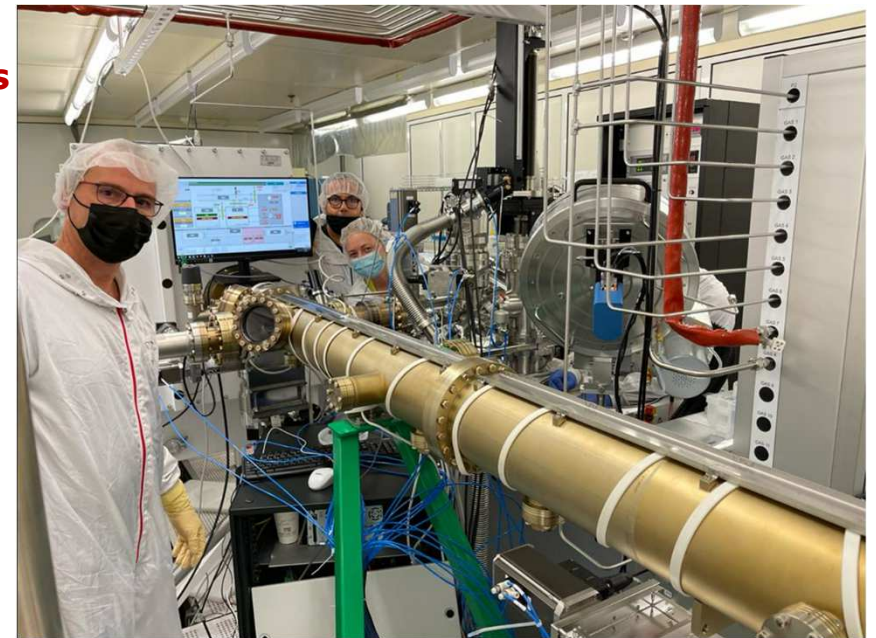
CONDENSED MATTER PHYSICS LAB



ONSITE INTEGRATION

Equipment for developing 2D materials:

- **14m UHV Transport system: Vinci Technologies** Linear Transfer Tunnel (Mecatrans) version for samples of 3"
- 1 Glove Box **MBRAUN**
- 2 Sputtering: **1 from Vinci Technologies**
- **Plasmatherm ICP: coupled via Vinci Technologies buffer chambers**
- UHV Thermal & Ebeam Evaporation **from Vinci Technologies**
- Atomic Layer Deposition ALD
- 1 redistribution chamber **from Vinci Technologies**





USA

NAVAL LAB

CLUSTER SYSTEM



CLUSTER SYSTEM

Equipment for developing 2D materials:

- Central Distribution Chamber with motorized automated transfer of 3 or 4" samples : **Vinci Technologies CDC**
- UHV 8 Cathode Sputtering system: **from Vinci Technologies**
- Specs Gmbh XPS
- UHV Molecular Beam Epitaxy MBE-2D **from Vinci Technologies**
- Future extension to STM

