Nanofab®

CVD/PECVD tools for growth of 1D/2D nanomaterials and heterostructures

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and Related Solutions

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OXFORD INSTRUMENTS
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Nanofab

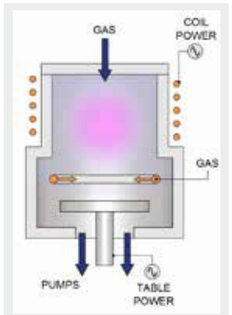
CVD, PECVD and ICP CVD systems for growth of nanomaterials

Nanostructured materials and PECVD films

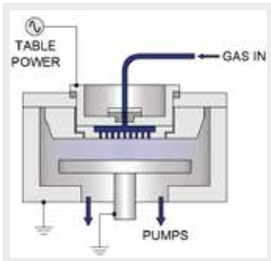
Chemical Vapour Deposition (CVD) techniques form the workhorse for research on nanomaterials. The flexibility of this technique allows deposition down to atomic layers as well as thicker films.

The Nanofab delivers high performance growth of nanomaterials with in-situ catalyst activation and rigorous process control.

- Cold wall design with showerhead based uniform precursor delivery
- Remote plasma via ICP option
- Vacuum load lock for quick sample exchange
- Excellent temperature uniformity
- Optional liquid/solid source delivery system for growth of MoS_2,$MoSe_2$ and other TMDCs
- Variable sample sizes up to maximum 200mm wafers
- Multiple view ports for diagnostics



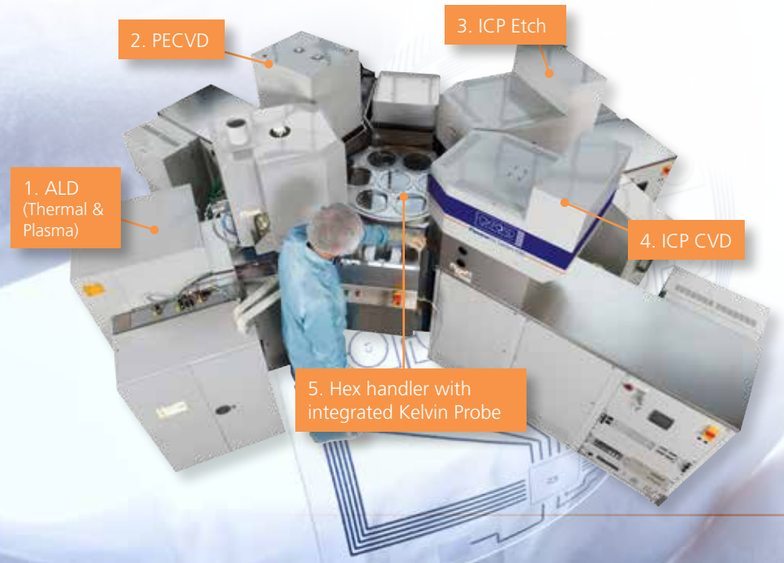
Remote Plasma ICP CVD



Nanofab PECVD source

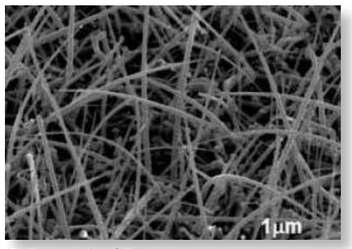

Inside view of precursor pot for liquid/ solid precursors. Example: $Mo(CO)_6$, $W(CO)_6$ DMDS, DESe, DETe etc.

Scalable production via a clustered tool assembly

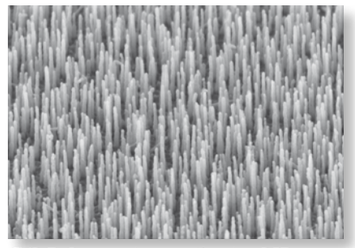


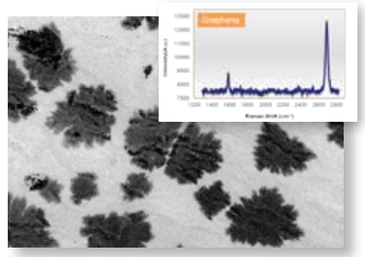
Processes

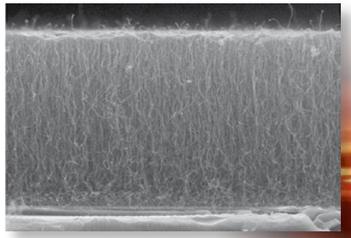
CVD, PECVD and ICP CVD

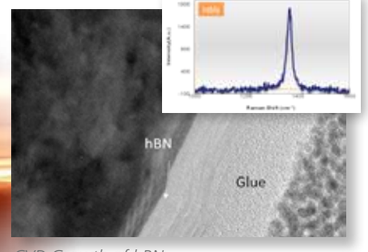


CVD growth of Silicon nanowires using Au nanoparticle catalysts

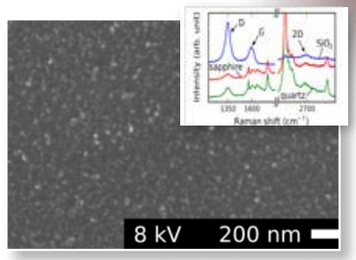

CVD ZnO nanowire growth using DEZn precursors. (Courtesy of Nanoscience Centre, Uni Cambridge)


Graphene domains on Copper foil. (Growth arrested before film completion to visualise domains in SEM)

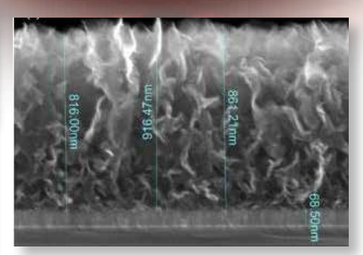

Dense Carbon Nanotubes grown by PECVD



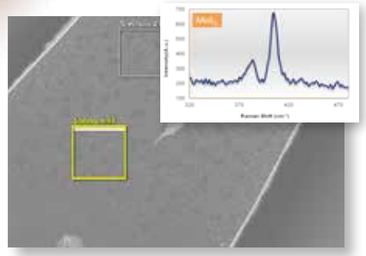
CVD Growth of hBN



PECVD of nanocrystalline Graphene on SiO_2. (Courtesy of Southampton Uni)



PECVD of vertically aligned graphene. (Courtesy of IMEC, Belgium)

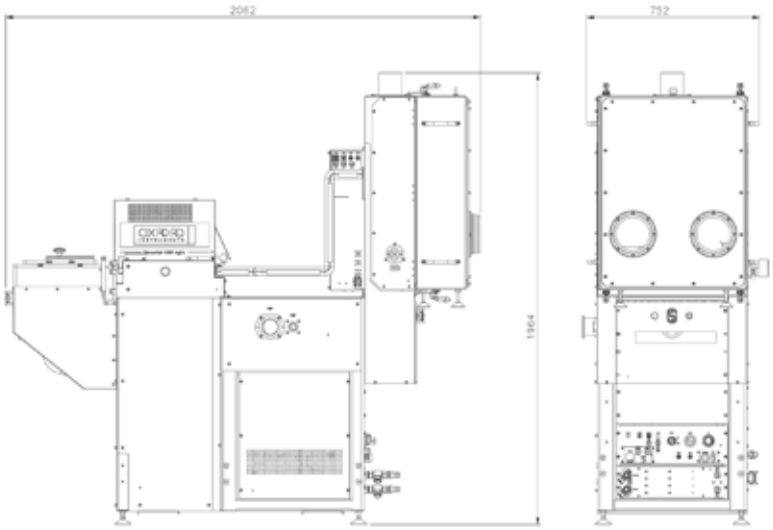

CVD Growth of MoS_2

	700°C table	800°C table	1200°C table
Thin Film Process	SiO_x, SiN_x, aSiC, aSi, µc-Si, polySi*	SiO_x, SiN_x, aSiC, aSi, µc-Si, polySi	SiO_x, SiN_x, aSiC, aSi, µc-Si, polySi
1D Nanomaterials	MWNTs, Si, Ge NWs, ZnO NWs	MWNTs, SWNTs*, Si, Ge NWs	MWNTs, SWNTs, Si, Ge NWs
2D Nanomaterials	NA	Nano- crystalline Graphene, Vertical Graphene	Graphene, hBN, MoS_2/WS_2, Vertical Graphene, Nano-crystalline Graphene

Technical Specifications

For further information about our Nanofab range, please contact your local Oxford Instruments Office

Nanofab dimensions *All dimensions in mm*



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