MOLECULAR BEAM EPITAXY: Bi/Se MBE MT

This is a Molecular Beam Epitaxy system with a base pressure of < 1 * 10^{-10} mbar using LN2 cooling. The system is able to be directly coupled to a Mecatrans UHV transfer tunnel.
It is dedicated to the growth of Bi/Se materials and their dopants.
Materials include Bi, Se, Te, S, Mo, Ti.

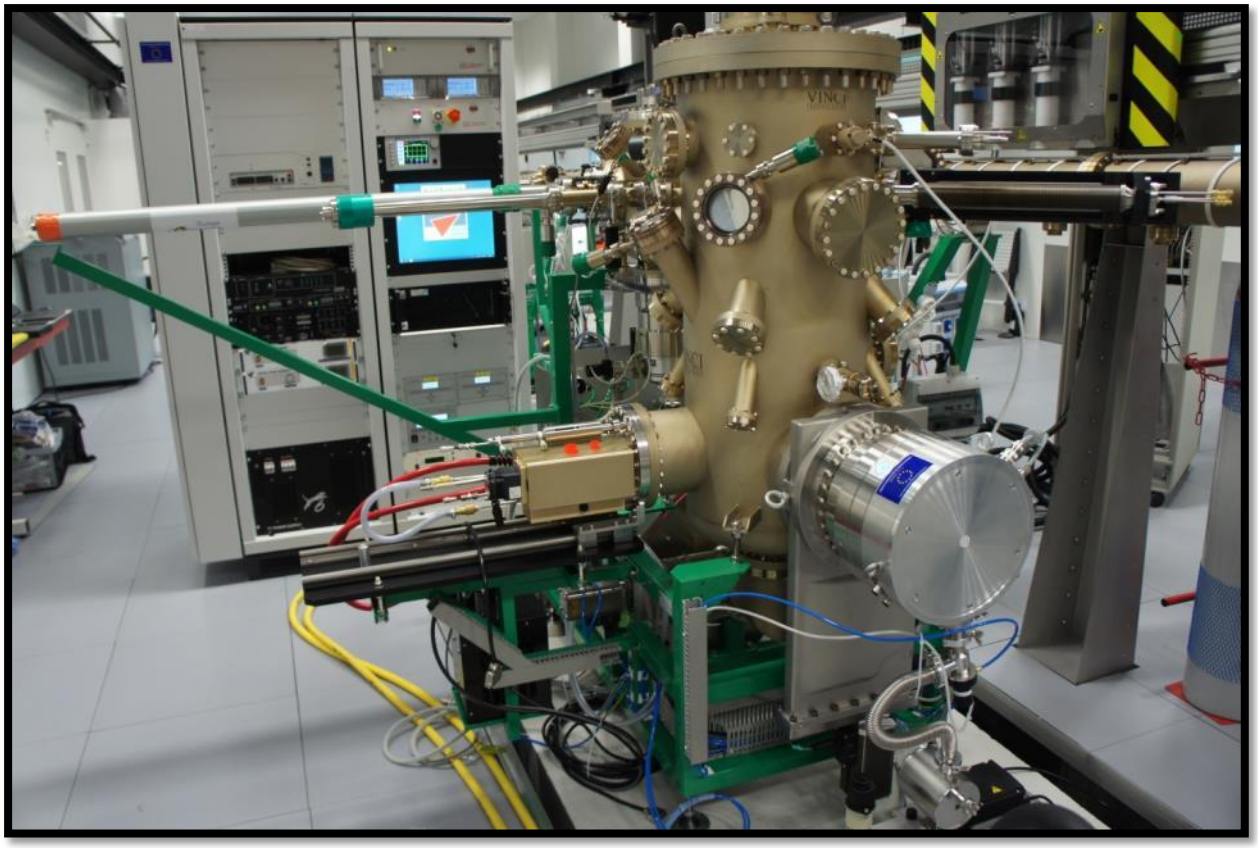

Figure 1: MBE system (example only)

Bi/Se MBE MT	
Growth chamber	➢ 304L SS Cylindrical chamber 450 * 800 mm **or greater**
	➢ Cryogenic panel full length
	➢ View port CF100 with pneumatic shutter
Base pressure	➢ 1 x 10^{-10} Torr
Pressure management	➢ Full range pressure gauge (pirani)
	➢ Hot cathode ion gauge
	➢ 35 m^3/h dry primary pump
	➢ 1000 L/s turbo pump
	➢ Automated pumping & venting cycles
	➢ Ionic Pump 400 L/s with Ti sublimator
	➢ Power supplies for PI 200W + Ti source
Growth process	➢ E gun 6 x 7cc
	➢ Translation stage for E gun
	➢ 1 x valved cracker effusion cell
	➢ 1 x standard temperature < 1400 °C Knudsen cell 10cc
	➢ 1 x HT > 2000 °C Knudsen cell 2 cc
	➢ 1 x LT < 1000 °C Knudsen cell 10cc
	➢ Pneumatic shutters included on all cells
	➢ Cooling shrouds included in all cells
Gas supply	➢ 2 lines with MFC's
Analysis feedback	➢ RHEED 30keV + accessories
	➢ Augers probe + accessories
	➢ Portable PC with RHEED-Augers software
	➢ 2 quartz heads with shutters
	➢ 1 x SQM-310 with 2 ports
	➢ Translation stage for quartz
	➢ Ion gauge for flux measurement
Substrate Manipulation	➢ Up to 2'' molyblock sample plate
	➢ Dual stage manipulator
	➢ Heating Stage Room temperature to 950 °C
	➢ PID regulation
	➢ Rotation continuous 0-360° 50-80 trs/min on heating stage

	➢ LN2 cooling stage down to -150°C
	➢ XY stage +/- 4mm
Supervision	➢ Full process control
General System	➢ 1 x Support Frame
	➢ 1 x Electrical Cabinet
	➢ Bakeout cables with integrated timer
	➢ Able to be directly coupled to an UHV linear Transfer system (Mecatrans)

MOLECULAR BEAM EPITAXY: OXIDE MBE MT

This is a Molecular Beam Epitaxy system with a base pressure of < 1 * 10^{-10} mbar using LN2 cooling. The system is able to be directly coupled to a Mecatrans UHV transfer tunnel.
It is dedicated to the growth of oxide materials.
Materials include V, Sm, Co, Ni, Fe, Mn, Ir

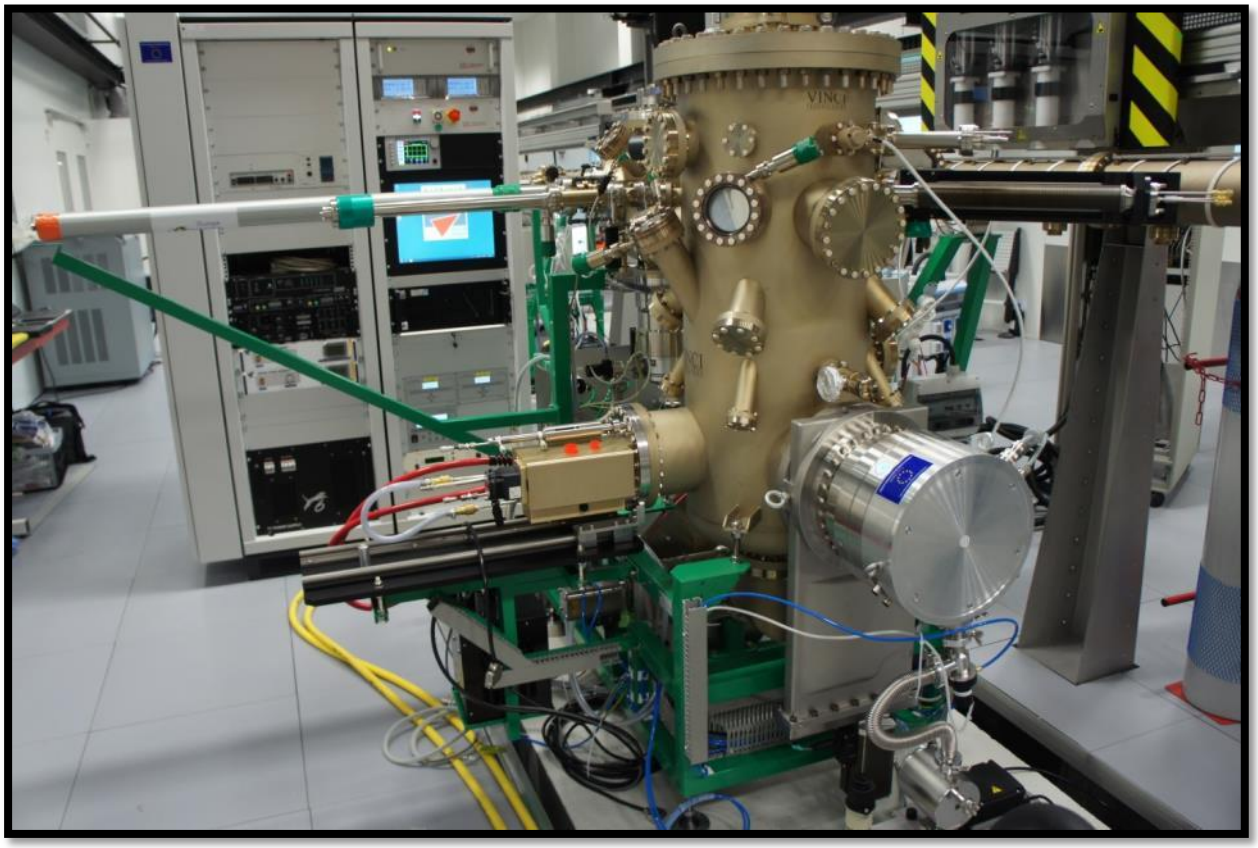

Figure 2: MBE system (example only)

Oxide MBE MT	
Growth chamber	➢ 304L SS Cylindrical chamber 450 * 800 mm or greater
	➢ Cryogenic panel full length
	➢ View port CF100 with pneumatic shutter
Base pressure	➢ Better than 1 x 10^{-10} mbar
Pressure management	➢ Full range pressure gauge (Pirani)
	➢ Hot cathode ion gauge
	➢ 35 m^3/h dry primary pump
	➢ 1000 L/s turbo pump
	➢ Automated pumping & venting cycles
	➢ Ionic Pump 400 L/s with Ti sublimator
	➢ Power supplies for PI 200W + Ti source
Growth process	➢ E gun 6 x 7cc
	➢ Translation stage for E gun
	➢ 1 x valved thermal cracker effusion cell
	➢ 3 x standard temperature <1400 °C Knudsen cell 10cc
	➢ Pneumatic shutters included on all cells
	➢ Cooling shrouds included in all cells
Gas supply	➢ 2 lines with MFC's
Analysis feedback	➢ RHEED 30keV + accessories
	➢ Augers probe + accessories
	➢ Portable PC with RHEED-Augers software
	➢ 2 QCMs with shutters
	➢ QCM controller with 2 ports
	➢ Translation stage for quartz
Substrate Manipulation	➢ Up to 2'' molyblock sample plate
	➢ Two stage manipulator
	➢ Heating Room temperature to 950 °C
	➢ PID regulation
	➢ Cooling down to -150 °C
	➢ Rotation continuous 0 to 60 rpm
	➢ XY stage +/- 4mm
Supervision	➢ Full process control
General System	➢ 1 x Support Frame

	➢ 2 x Electrical Cabinets
	➢ Bakeout cables with integrated timer
	➢ Able to be directly coupled to a UHV linear transfer system (Mecatrans)