# Research Laboratories

## 1- Thin Films Deposition and Nanostructures Laboratory(TFDN)

| No. | Instrument Brand and Model | Qty. | |
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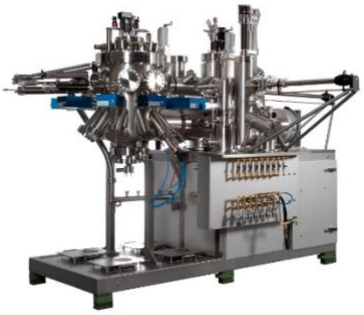
| 1 | **Molecular Beam Epitaxy**<br><br>***Oxford EVO-50 MBE Systems***<br><br>The EVO-50 MBE-Systems are dedicated growth systems with a loadlock chamberand with an optional preparation/storage chamber. The substrate size is 2". The systems of course also accept the Omicron standard sample plates.The carefully designed chamber with up to 10 effusion cells shows excellent thickness uniformity for all substrate sizes. The large effusion cell capacity of to 80 cm3 for layer growth increases the up-time of the system significantly.The fast & reliable sample transfer together with the excellent performance results in a low cost of ownership. The optional available easy & intuitive to operate growth control software and the possibility to add standard Omicron analysis equipment makes this a unique MBE system for researchers<br>*Growth Applications:*<br>- Metal MBE growth<br>- Semiconductor growth (III-V, III-N, II-VI, SiGe)<br>- Magnetic materials growth<br>- Oxide MBE growth<br>- Organic MBE | **1** |  |
| 2 | **CVD Easytube 2000**<br>***First Nano***<br><br>EasyTube® 2000 is an advanced turnkey thermal chemical vapor deposition system for the synthesis of a wide variety of thin films and nanomaterials. | **1** |  |

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| **3** | ***Desk Sputtering System from Denton Vacuum Desk V***<br><br>The Denton Vacuum DESK V Cold Sputter/Etch Unit is designed to deposit a conductive coating on anSEM sample and to provide some limited surface cleaning in somemodel***s.*** | **1** |  |
| **4** | **Edwards Thermal Coating Unit**<br>***AUTO306***<br>The Auto306 is a versatile and compact coating system which has been developed to meet the demands of the researcher and electron microscopist.With its full range of vacuum systems, chamber and modular process accessories the Auto306 offers a range of techniques to complement the modern laboratory. | **1** |  |
| **5** | **Alpha step surface profiler**<br>*KLA-Tencor Alpha-Step IQ*<br><br>The Alpha-Step IQ is a state-of-the-art, stylus-based surface profiler that combines high measurement precision with versatility and economy. This third generation Alpha-Step IQ is Ideal for applications such as pilot lines and materials research, enabling fast process learning and high yields. With guaranteed 7.5 Å (1σ) or 0.1% step height repeatability and sub-angstrom resolution, the Alpha-Step IQ provides excellent repeatability and performance to analyze and monitor processes. This system offers the most complete suite of two-dimensional analysis features for surface topography analysis on a variety of surfaces including wafers, MEMS, ceramics, SIMS craters, micro lenses, hard disks and displays. The system is controlled by a fast and more powerful computing platform than previous Alpha-Step IQ versions, offering networking and USB communications. | **1** |  |

# 2- Solid Sate Structures and Thermal Analysis Laboratory (SSSTA)

| No. | Instrument Brand and Model | Qty. | |
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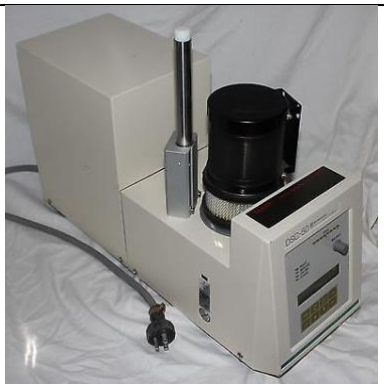
| 1 | **Differential scanning calorimetry DSC**<br>***Shimadzu-DSC50***<br><br>The DSC-50 Plus is an indispensable thermal analyzer for materials characterization in R&D and quality control applications in such areas as polymers, pharmaceuticals, electronic parts, foods, etc. It offers the sensitivity and easy operation required for the development of high-performance, highly functional new materials | 1 |  |
| 2 | **Differential thermal analyses DTA**<br>*Shimadzu–DTA50*<br><br>Ideal for Characterizing Materials such as Glass and Ceramics | 1 |  |
| 3 | ***Thermogravimetric Analysis-TGA***<br>***Shimadzu–50***<br><br>Thermal analyzer is an indispensable for materials characterization in R&D and quality control applications in such areas as polymers, pharmaceuticals, electronic parts , foods , etc. | 1 |  |
| 4 | **SETSYS EVOLUTION**<br>*SETRAM*<br><br>***SETSYS Evolution TMA***<br><br>High-performance modular ThermoMechanical Analyzer TMA | 1 |  |

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| | (ambient / 2400°C) The HIGHLIGHTS SETSYS Evolution is the standard for high performance TG, TG-DSC and TG-DTA application. It is based on a complete modular thermal analysis platform for – TGA, DTA and DSC – Simultaneous TGA/DTA and TGA/DSC – Dilatometry/TMA The key to the SETSYS TMA is the vertical design of its.<br><br>**Applications:**<br><br>SETSYS Evolution is designed for the most demanding atmospheres and long term isotherms. Its applications include studies on oxidation / corrosion of metals and alloys, reaction between a material and a gas, isothermal stability of materials under particular atmospheres, phase transitions of metals, etc. | | |
| **5** | **Vickers Hardness tester**<br>*Metron*<br>**ISO 6507, ASTM E384, JIS Z2244**<br>Applications<br><br>Micro Vickers and Knoop Hardness Tester - QVK-1000 is a new Hardness Tester combining the optics, mechanic and electrics features. With a novel and pleasing appearance, the internal structure is mainly made by stainless steel parts, has better performance.<br><br>It adopts a new type of automatic turret mechanism, equipped with both Micro Vickers and Knoop indenters. These two indenters adopt the independent alignment device which ensures that | **1** |  |

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| | Vickers and Knoop indentation are at the same center position. It can directly shows the test mode, test force, indentation length, dwell time, test numbers, conversion scale, date and time on the large screen.<br><br>As long as press the eyepiece button after measuring the indentation length, it can automatically get the hardness value and shows on the screen. With the up and down limit alarm function, test results can be saved for checking or be printed out by the built-in printer, and with RS232 interface for connecting to the computer. It also equipped with CCD image automatic measuring system.<br><br>Micro Vickers and Knoop Hardness Tester - QVK-1000 is suitable for ferrous metal, non-ferrous metals, IC thin sections, coatings, ply-metals; glass, ceramics, agate, precious stones, thin plastic sections etc.; hardness testing such as that on the depth and the trapezium of the carbonized layers and quench hardened layers. | | |
| **6** | **X-Ray Diffractometer**<br>*Shimadzu XRD6000*<br>The XRD-6000 offers solutions encompassing wide-ranging analysis requirements, from routine qualitative and quantitative analysis to state change analysis, including stress analysis, residual austenite quantitation, crystallite size / lattice strain, crystallinity calculation, materials analysis via overlaid X-ray diffraction patterns, enhanced material evaluation and sample heating analysis. And, of course, crystalline structural analysis is also supported, including precise lattice constant determination and crystal system determination. | **1** |  |

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| | **Applications:**<br>Steels, non-ferrous metals, machinery, shipbuilding, welding, automobiles, ceramics, cement, glass, catalysts, electrical parts, electronic materials, magnetic materials, superconductive materials, fibers, paper, pulp, food products, chemicals, agricultural chemicals, dies, pigments, paints, pharmaceuticals, dental materials, biological matter, petroleum, coal, power generation, natural gas, mining ore, soil, rocks, clay, minerals, construction, civil engineering, environment, and industrial waste. | | |
| **7** | **Scanning Electron Microscope** *JOEL*<br><br>JEOL has played a leading role in the development and evolution of scanning electron microscopes since the early 1960s. JEOL provides valuable applications support, comprehensive training, and award-winning service for the long lifetime of our instruments.<br><br>JEOL innovations in resolution and functionality enable the microscopist to better image and characterize a new generation of nanomaterials, capture biological details, analyze forensic evidence in detail, direct write fine nanopatterns, and pinpoint elusive quality problems. | **1** |  |
| **8** | **Atomic force Microscope**<br>*NT–MDT*<br>Atomic Force Microscope NEXT provides motorized sample positioning and integrated high resolution optical microscope positioning, motorized continuous zoom and focusing of the optical microscope. But AFM automation is more than just motorization. Powerful Nova PX software algorithms remove a | **1** |  |

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| | gap between optics and AFM providing continuous zoom from huge panoramic optical view down to atomic resolution. | | |

## 3- Optical and Photoelectronic Measurements Laboratory (OPM)

| No. | Instrument Brand and Model | Qty. | |
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| **1** | **Optical Cryostat**<br>*Oxford*<br>A new optical cryostat from Oxford Instruments allows users to cool samples to less than 3 K without the need for liquid cryogens.<br>Optistat Dry can be used for a range of spectroscopy applications including Raman, Fourier-transform infrared (FTIR), fluorescence, photoluminescence and UV-visible. | **1** |  |
| **2** | **FTIR**<br>*Thermo Scientific 7600*<br><br>FTIR-7600 is a single-beam Fourier-transform infrared spectrometer with fast scan speed and high accuracy. This instrument is operated by a PC with user friendly software and a comprehensive manual. It is a valuable tool for various analytical applications in fields such as.<br><br>Use Fourier transform infrared (FTIR) spectroscopy to | **1** |  |

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| | • Identify unknown materials (e.g., Forensics, Art restoration, Counterfeit testing)<br>• Conduct contaminant analysis (e.g., Analytical Services, Gemology)<br>• Reverse engineer new products (e.g., Materials Science research)<br>• Verify chemical structure and mixture compositions (e.g., Quality Assurance). | | |
| **3** | **Ellipsometer**<br>*V-VASE,J.A. Woollam Co.*<br>The VASE® is an accurate and versatile ellipsometer for research on all types of materials: semiconductors, dielectrics, polymers, metals, multi-layers, and more. It combines high accuracy and precision with a wide spectral range – up to 193 to 3200nm. Variable wavelength and angle of incidence allow flexible measurement capabilities, including:<br>• Reflection and Transmission Ellipsometry<br>• Generalized Ellipsometry (Anisotropy, Retardance, Birefringence)<br>• Reflectance (R) and Transmittance (T) intensity<br>• Cross-polarized R/T<br>• Depolarization<br>• Scatterometry<br>• Mueller-matrix | **1** |  |
| **4** | **QE/IPCE Measurement Kit**<br>*Newport*<br>Product Name：**QE/IPCE Measurement Kit**<br>Product Type：Measurement Kit<br>Product Model：QE/IPCE<br>Brands：Newport<br>Applications：Photovoltaic | **1** |  |

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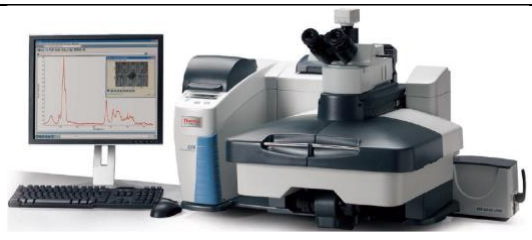
| | Energy,Optical Communication,Fiber Optical Communication.<br>Feature :<br>• Preselected components for the solar cell QE/IPCE measurements<br>• Simple, yet flexible software that measures QE with a simple configuration setup<br>• 300 W Xe light sources<br>• All components from Newport which makes support easy<br>• Digital lock-in measurements with a NIST calibrated detectors over the 350–1100 nm range<br>• Solar cell fixture available.<br><br>The new QE/IPCE measurement kit allows researchers to measure Quantum efficiency (QE) and Incident Photon to Charge Carrier Efficiency (IPCE) measurement for solar cells, detectors, or any other photon-to-charge converting device. We selected the most suitable components for your measurements needs. All Oriel® components are from Newport Corporation, an industry leader in light sources and spectroscopy products, as well as continuous wave solar simulators. | | |
| **5** | **DXR Raman Microscope**<br>*Thermo scientific*<br>The Thermo Scientific™ DXR™ Raman microscope is designed to produce the results demanded by Raman experts with the ease required by busy analytical laboratories. SmartLock optical components and a patented autoalignment system make set-up easy, fast and precise. Automated calibration, focus and exposure ensure quality results with every measurement.<br><br>Raman spectroscopy is a spectroscopic | **1** |  |

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| | technique used in condensed matter physics and chemistry to study vibrational, rotational, and other low-frequency modes in a system. It relies on inelastic scattering, or Raman scattering of monochromatic light, usually from a laser in the visible, near infrared, or near ultraviolet range. The laser light interacts with phonons or other excitations in the system, resulting in the energy of the laser photons being shifted up or down. The shift in energy gives information about the phonon modes in the system. | | |
| **6** | **UV-VIS-NIRSpectrophotometer**<br>*JASCO V570*<br><br>Jasco V-570 UV-Vis-NIR Spectrophotometer with INS-470 Integrating Sphere Attachment<br><br>• Obtain the absorption, percent transmittance, or percent reflectance spectrum of a solution in the range 190-2500 nm.<br>• Dual-beam for beam intensity fluctuations.<br>• The integrating sphere attachment is designed to measure the transmittance and reflectance of a sample that diffuses light rather than absorbs light. Can be used for solids or dispersed particles in solution. With the integrating sphere attachment, can scan from 220 nm-2,000 nm. | **1** |  |

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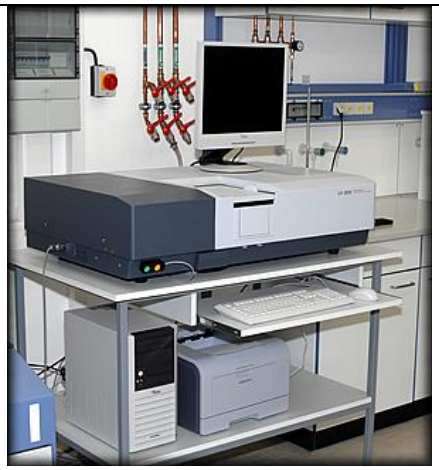
| **7** | **UV-VIS-NIRSpectrophotometer**<br>*Shimadzu UV3600*<br>Descriptions:The UV-3600 UV-VIS-NIR Spectrophotometer combines research-grade UV-Vis or UV-Vis-NIR optical performance with the ease and familiarity of PC operation.It is designed for the measurement of liquid samples, the UV-3600 features three detectors and a high-performance double monochromator to ensure high sensitivity, reduced noise, and ultra-low stray light.<br><br>**Applications**<br><br>The UV-3600 Plus UV-Vis-NIR spectrophotometer is applied in:<br><br>• Imaging devices, such as mobile phones, security cameras and digital cameras<br>• Nanotechnology<br>• Photovoltaics<br>• Coatings | **1** |  |

# 4- Solid State Synthesis by Molding (SSSM)

| No. | Instrument Brand and Model | Qty. | |
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| 1 | **Furnace**<br>Carbolite<br><br>• **Max. temp. up to 1800°C**<br>• Laboratory Furnaces<br>• Industrial Furnaces<br>• Ashing Furnaces<br>• Annealing Furnaces | 2 |  |
| 2 | **Furnace**<br>Lenton<br><br>**Furnaces for thermal treatments**<br><br>The lab is equpiied with two furnaces. A Lenton ECF 12/6 muffle furnace for treatments in air up to 1200 °C and a Lenton LTF 12/100/940 tubular furnace (single zone) for treatments in vacuum (10-5 mbar) or in controlled atmosphere (inert or reactive gas). Both are equipped with a PID controller to set ramps and set points up to 8 segments. | 2 |  |
| 3 | **Thermal analysis**<br><br>Improve accuracy, sensitivity, and performance in thermal analysis using our comprehensive portfolio of instruments. Applications of our industry-leading technology include:<br><br>• QA/QC applications<br>• Studying pharmaceutical processes<br>• Polymer analysis<br>• Identification of recycled plastics<br>• Determination of packaging materials<br>• Nanomaterials | 3 |  |

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| | • Coatings<br>• Composites<br>• And much more | | |
| **4** | **GRINDER/POLISHER**<br><br>**MODEL-900, BETA**<br>BUEHLER Phoenix Beta Sample Preparation System Grinder Polisher FC AC220V.<br>he lightweight Model 900 - 8" Grinding/Polishing Wheel is ideal for surface preparation of small metallographic specimens. The Model 900 is a variable speed unit with an operating range of 0 - 1725 RPM. This flexibility allows for high speed rough grinding and low speed final polishing. The Model 900 is designed for long life. Its molded plastic housing will never rust, and the 1/3 HP, fully grounded motor with electronic speed control is designed for regular laboratory use. A metal splash guard has been added that can be used as a hand rest when using our tripod polisher or our other lapping fixtures. | **2** |  |

# 5- Electric and Magnetic Properties Lab (EMP)

| No. | Instrument Brand and Model | Qty. | |
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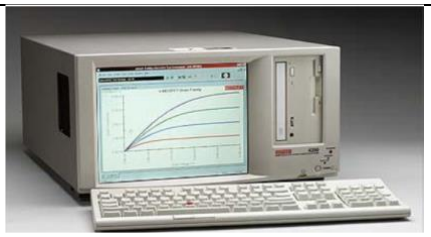
| **1** | **Hall Effect Systems**<br>*Lake Shore, 7700*<br>The 7700 Series HMS is discontinued. Please consider the 8400 Series HMS instead.<br>Features of the 7700A Series<br>▪ Standard sample resistance ranges from 0.04 mΩ to 200 GΩ<br>▪ Fields to >2 T<br>▪ Temperatures from 15 K to 800 K<br>▪ Measure up to 6 in wafers<br>▪ Quantitative Mobility Spectrum Analysis (QMSA®) software resolves individual carrier mobilities and densities in multi-carrier devices<br>▪ Anomalous Hall Effect measurements for spintronics including dilute magnetic semiconductors and ferromagnetic metallic alloys. | **1** |  |
| **2** | **Semiconductor characterization system**<br>*Keithley 4200*<br>Model 4200-SCS Semiconductor Characterization System Declassificatio and Security Instructions Instructions If you have data security concerns, this document tells you how to clear or sanitize the Keithley Instruments Model 4200-SCS Semiconductor Characterization System's memory devices. It also explains how to declassify an instrument that is not functioning.<br>**Description:**<br>**DC I-V, C-V, and Pulse in One** | **1** |  |

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| | **Test Environment**<br><br>• Intuitive, point-and-click Windows®-based environment<br>• Unique Remote PreAmps extend the resolution of SMUs to 0.1fA<br>• C-V instrument makes C-V measurements as easy as DC I-V<br>• Pulse and pulse I-V capabilities for advanced semiconductor testing<br>• Scope card provides integrated scope and pulse measure functionality<br>• Self-contained PC provides fast test setup, powerful data analysis, graphing and printing, and on-board mass storage of test results<br>• Unique browser-style Project Navigator organizes tests by device type, allows access to multiple tests, and provides test sequencing and looping control<br>• Built-in stress/measure, looping, and data analysis for point-and-click reliability testing, including five JEDEC compliant sample tests<br>• Integrated support for a variety of LCR meters, Keithley switch matrix configurations, and both Keithley Series 3400 and Keysight 81110 pulse generators<br>• Includes software drivers for leading analytical probers. | | |

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| **3** | **Electromagnat**<br>*Hv-5h variable gap*<br>*Magnt scientific walker In-5h variable*<br><br>The **3473 Dipole Electromagnet** accepts a range of pole caps with face diameters up to 150mm. The model 3473-50 is fitted with a 50Amp coil pair, and has a coil gap of 127mm. The model 3473-70 is fitted with a 70Amp coil pair with enhanced cooling, and has a coil gap of 96mm. The 3473-70 is recommended when high fields are required at large pole gaps or to achieve maximum field stability for spectroscopic or similar applications.<br><br>**Applications**<br><br>• Hall Effect Studies<br>• Magneto-Optical Studies<br>• Laboratory Experiments<br>• Magnetic Separation experiments<br>• Magnetic alignment of small components<br>• Studying chemical reaction rate changes. | **1** |  |
| **4** | **Lock In Amplifier**<br>*Stanford, 7265Dsp*<br>The SIGNAL RECOVERY model 7265 uses digital signal processing (DSP) technology to extend the operating capabilities of the lock-in amplifier to provide the researcher with a very versatile unit suitable both for measurement and control of experiments.<br><br>Operating over a frequency range of 1 mHz to 250 kHz, the model 7265 offers full-scale voltage sensitivities down to 2 nV and current sensitivities to 2 fA. The instrument has a choice of | **1** |  |

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| | operating modes, signal recovery or vector voltmeter, for optimum measurement accuracy under different conditions, and the use of DSP techniques ensures exceptional performance.<br><br>The 7265 is capable of measuring the in-phase and quadrature components, vector magnitude, phase angle and noise of the input signal. | | |
| **5** | **Frequency response analysis**<br>**PSM3750 Frequency Response Analyzer: 10µHz–50MHz, Isolated Inputs (500Vpk), Isolated AC+DC Coupled Generator**<br><br>The PSM3750 builds upon the success of the PSM2200 and PSM17xx series of frequency response analyzer ranges and combines the experience gained from the design and development of our power analyser range of isolated input channels in order to provide a solution for high voltage, high accuracy, isolated gain and phase measurement. Utilising an innovative design that incorporates both direct digital analysis and heterodyning techniques within 500Vpk galvanically isolated input/output channels, the PSM3750 provides a broad range of measurement functions over a wider frequency range than any other instrument available today.<br><br>As with other N4L products, PSM3750 NumetriQ utilises the latest DSP and FPGA technology to optimise the use of its analogue hardware providing speed and measurement flexibility without compromise on the performance of each measurement function. | |  |

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| **6** | **LCR Meter 20HZ – 1MHZ**<br>*Agilent 4284A*<br>**Description:**<br>Key Features & Specifications<br>Frequency<br>Wide Range DC Current Biased Inductance Measurement<br>0.05% basic accuracy<br>40 A DC support with the Keysight 42841A (NOT INCLUDED) Bias Current Source<br>Description.<br>The 4284A precision LCR meter is a cost-effective solution for component and material measurement. The wide 20 Hz to 1 MHz test frequency range and superior test-signal performance allow the 4284A to test components to the most commonly-used test standards, such as IEC/MIL standards, and under conditions that simulate the intended application. Whether in research and development, production, quality assurance, or incoming inspection, the 4284A will meet all of your LCR meter test and measurement requirements. | **1** |  |
| **7** | **Digital Multimeter**<br>*Keithley 2002*<br>**Description of Keithley 2002**<br>True 8.5-digit resolution Exceptional measurement integrity with high speed Broad range of built-in measurement functions Built-in 10-channel scanner option IEEE-488.2 and SCPI compatible DMM users whose applications demand exceptional resolution, accuracy, and sensitivity combined with high throughput now have two attractive alternatives to high priced, high-end DMMs. Keithley's | **3** |  |

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| | 8.5-digit Model 2002 high performance digital multimeter delivers performance specifications usually associated only with instruments that cost thousands more, and they also offer a broad range of functions not typically available from DMMs. The resolution specifications of the 2001 and 2002 are based on a 28-bit A/D converter that provides the resolution needed to discern smaller changes.<br><br>The Model 2002 offers a variety of advantages over other 81/2-digit measurement instruments of comparable accuracy, particularly its DC volts and resistance measurement capabilities. For example, its measurement performance is specified for a ±5°C environment, not a ±1°C environment like many others, and its performance is specified for a wide range of measurement speeds.<br><br>• True 8 1/2-digit resolution<br>• Exceptional measurement integrity with high speed<br>• Broad range of built-in measurement functions<br>• Built-in 10 channel scanner option<br>• IEEE-488.2 and SCPI compatible<br>• HP 3458A emulation mode. | | |

## 6- Advanced Functional Materials and Optoelectronics Laboratory (AFMOL)

| No. | Instrument Brand and Model | Qty. | |
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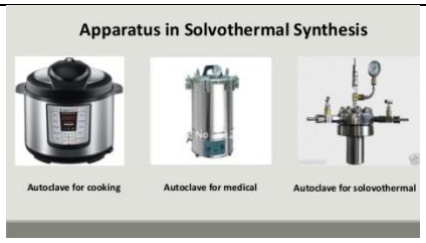
| **1** | **Microwave digestion**<br>The goal of microwave digesters is to completely break down samples such as metals, pharmaceuticals, plants, soil, or food so they are ready for elemental analysis. Microwave digestion systems are popular because their decreased digestion times, due to the use of closed vessels made of chemically inert materials and direct heating of sample solution, can result in significantly higher sample throughput. Typical digestions will take approx. 20–40 min and can reach up to 310 °C and 2000 psi. For atmospheric digestions, open-vessel microwave digestion systems are also available, capable of digesting samples up to several grams in size. Maximum microwave power output is a good place to start when shopping for a microwave digester, since higher temps will result in faster and more thorough digestions. Take note of the system's pressure and temperature monitoring safeguards, as well as the number of samples you'll be able to process per run. | **1** |  |
| **2** | **Autoclave for Solvothermal and Hydrothermal Methods.**<br>• 1. Hydrothermal / Solvothermal Synthesis of Nanomaterials Content • What is hydrothermal / solvothermal synthesis? •What is the main characteristics of Hydrothermal / Solvothermal synthesis? • Advantages & Application •Summary •Examples synthesis of nanomaterials via hydrothermal / solvothermal method<br>• 2. BRIEF HISTORY OF THE SOLVOTHERMAL CRYSTAL GROWTH OF LARGE SINGLE CRYSTALS The history of the solvothermal Crystal Growth is closely related | **1** |  |

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| | toThe history of the solvothermal Crystal Growth is closely related to the hydrothermal crystal growth ofthe hydrothermal crystal growth of αα-quartz.-quartz. due to: → its piezoelectric properties (leading to important applications) → its low temperature domain of stability (Tα-quartz → Tβ-quartz = 573°C) (impeding the use of conventional Crystal-growth processes) →The elaboration of α-quartz single crystals was the first example for industrial developments of Hydrothermal Crystal Growth.<br>• 3. Diamonds, quartz , piezoelectric crystal are made by hydrothermal method<br>• 4. A "solvothermal reaction can be defined as a chemical reaction (or a transformation) between precursor(s) in a solvent (in a close system) at a temperature higher than the boiling temperature of this solvent and under high pressure" → autogeneous pressure or imposed pressure. → Subcritical or supercritical domain. → Homogeneous or heterogeneous system. SOLVOTHERMAL REACTIONS SOLVOTHERMAL PROCESSES: FROM NOVEL MATERIALS TO HYBRID NANO-SYSTEMS.<br>• 5. 6 SOLVOTHERMAL PROCESS The term « SOLVOTHERMAL » was proposed at the beginning of the 90's (G. DEMAZEAU et al.) during the development of non-aqueous solvents. Examples. ⇒ | | |

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| | Synthesis and crystal growth of nitrides using liquid ammonia (NH3) as solvent → ammothermal process ! ⇒ Synthesis and crystal growth of Fe3O4 as small single crystals using C2H5OH as solvent → alcoholothermal process…! Consequently each solvent can lead to a specific « word » for different processes characterized by the same features. SOLVO – THERMAL Solvent use of the temperature | | |
| **3** | **Spin coater**<br><br>**Cee® 200X spin coater**<br><br>Brewer Science® Cee® precision spin coaters deliver track-quality performance, with revolutionary interface capabilities and chemical compatibility, in an efficient, space-saving design.<br><br>**Introduction to the Cee® 200X Precision Spin Coater.**<br><br>he Cee® 200X precision spin coater delivers track-quality performance, with revolutionary interface capabilities and the utmost in chemical compatibility, in an efficient, space-saving design.Fully programmable and user-friendly, the Brewer Science® Cee® 200X precision spin coater features the accuracy and repeatability needed to eliminate processing variability from | **1** |  |

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| | critical experiments. With its convenient, compact footprint, wide range of chemical compatibility, and durability, this easy-to-use benchtop system will provide years of high-performance operation, making the purchase of a Cee® 200X tool a smart and cost-effective decision. | | |
| **4** | **fuming hood**<br><br>**Description:**<br>Fume Hood is used to protect lab environment and operator during general chemical applications. It actively protects operator from inhaling toxic vapors and dramatically reduces the risk of fire and explosion. By installing proper filter, it can also protect environment. | **3** |  |
| **5** | **hotplate stirrer**<br><br>**Product description.**<br><br>Magnetic stirrer with heating and ceramic heating plate which offers excellent chemical resistance. Powerful motor for stirring quantities of up to 10L (H2O) Exact temperature setting via digital display (LED) Bushing according to DIN 12878 for connecting a contact thermometer, e.g. ETS-D5, enables precise temperature control Fixed safety circuit of 550 °C Hot Top indicator >> hot surface warning to prevent burns! Digital error code display Elevated control panel for protection against leaking liquids | **10** |  |

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| **6** | **Homogenizer**<br>**Description.**<br>The PRO25D homogenizer has a wide volume range with a processing capability up to 3.5 Liters*. Its digital display & speed control provides the ability to fine-tune speeds between 0 to 30,000 RPM, allowing its speed adjustment to be precisely controlled throughout the entire speed range.<br><br>The versatile and powerful PRO25D Homogenizer is ideal for a wide range of lab applications, including but not limited to compounding, emulsions and suspensions, cell disruption, protein extractions, medical research or pharmaceutical processing. PRO generator probe range in diameter from 5mm to 30mm, it can process samples from 0.05ml to 3.5L*. Requires a generator probe to use. Generator probe sold separately.<br><br>A stand is included with the Homogenizer. PRO Homogenizing Equipment is made in the USA.<br><br>**Please Note:** Viscous samples will reduce max capacity. Adding a Deflector Head to your Generator Probe will facilitate movement of your sample during homogenization and help increase max volume homogenization.<br><br>*Higher volumes dependent on | **1** |  |

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| | viscosity.<br><br>We at PRO Scientific know you have a lot of choices to make in your lab, so we want to help make choosing a lab homogenizer as simple as possible. | | |