

S/N	Description	Qty
1	<p><b><u>Gas chromatograph</u></b></p> <p>Oven volume: <math>\geq 12</math> L  Simultaneous Inlets: 02 to 03 (Packed &amp; Capillary with septum)  Detectors option: 03  Detector installed: 02 (TCD, ECD)  Operating Temp: <math>+4^{\circ}\text{C}</math> to <math>450^{\circ}\text{C}</math>  Temperature programming  Precise temperature control: Electronic and manual  Precise pneumatic control: Electronic and manual  Gas flow rate control: Electronic and manual  Installed kit for gas purification  Column type:</p> <ul style="list-style-type: none"> <li>• Porapak Q. (80/100, 12 Feet, OD 1/8, ID 2mm)</li> <li>• Carboxen 1000 (60/80, 15 Feet, OD 1/8, ID 2mm)</li> <li>• MolSieve 13X (60/80 UM, 12 Feet, OD 1/8, ID 2mm)</li> </ul> <p>Auto gas sampling valve: 2 mL  PC with compatible Software: Up to date with fast data analysis  Syringes: gas tight (1 mL, 2 mL)  for liquids (100 <math>\mu\text{L}</math>, 500 <math>\mu\text{L}</math>)</p> <p>(Ex. Agilent GC, Model: 7890B Series by USA equivalent or better)</p>	01
2	<p><b><u>Electrochemical workstation</u></b> (Potentiostat/Galvanostat/FRA)</p> <p>Control voltage: <math>+10\text{V}</math> to <math>-10\text{V}</math>  Current ranges: 5A - 50pA  Frequency range: 10<math>\mu\text{Hz}</math> to 1MHz  Cell connection: 4probe type  Shielded cell cable: <math>\sim 2\text{m}</math>  Output: Digital and Analog  Included: USB Cable and Thermocouple  Electrochemical Analysis Software Package  EIS Analysis Software Package  Battery Test Software Package  Corrosion Test Software Package  Standard techniques: Potentiostatic, Galvanostatic, OCP measurement; Potential sweep, Current sweep, Cyclic voltammetry, etc.</p> <p>(Ex. ZIVE SP5 Electrochemical Workstation by WonaTech, South Korea, equivalent or better)</p>	01
3	<p><b><u>Lab ball mill machine</u></b></p> <p>R.P.M range: 0 to 300  Accuracy: <math>\pm 2</math> rpm  Time range: 00.00 to <math>\sim 100</math> hours  Selectable digital time counter  Selectable digital rpm. counter  Roller length: 700(mm) <math>\times</math> 2stage  Power input: AC 220V, 50/60Hz</p> <p>(Ex. SH Scientific, Model: SH-BALL700-2, South Korea, equivalent or better)</p>	01

4	<b><u>Box furnace</u></b>  Dimensions: 200W X 200H X 300D Max. Temperature: $\geq 1500^{\circ}\text{C}$ Temp. accuracy: $\pm 1^{\circ}\text{C}$ Program P.I.D Controller Power Input: AC 220V, 50/60Hz  (Ex: AJ-SB3, South Korea, equivalent or better)	01
5	<b><u>Tube furnace</u></b>  Temp. range: 30-1100°C Temp. ramping K long-life thermocouple Heating Zone of 12 inches Accepts tubes with OD of 1 inch Safety switch disconnects power when furnace is opened Simultaneous LED display of temperature and set-point in °C or °F  (Ex. Thermo Scientific Lindberg/Blue M Mini-Mite Tube Furnace C2 TF55035A-1, equivalent or better)	01
6	<b><u>Digital ultrasonic bath</u></b>  Type: Programmable Frequency or speed: slow, medium, fast Water bath volume: $\geq 2.5\text{L}$ Ultrasonic Generator: Micro Controller base Optional: Frequency sweep Power Input: AC 220V, 50/60Hz  (Ex: ELMA Ultrasonic Cleaner S30H, equivalent or better)	01
7	<b><u>Hot plates (with PTFE magnetic stirrer bars set)</u></b>  Temperature Range: $+5/500$ Max. stirring speed: $> 1000\text{ rpm}$ Top: Pyroceram Dimensions: 5" x 7" Stirrer bars dimensions: 20mm x 8 mm, 30mm x 8 mm, 45mm x 9 mm (06 each)  (Ex. Corning PC-420D, equivalent or better)	02
8	<b><u>pH meter</u></b>  pH range: -2 to 16 pH accuracy: $\pm 0.003$ calibration: User selectable 1, 2 or 3 point Temp. range: -10 to 100°C Voltage range: $\pm 1999.9\text{mV}$  (Ex. Jenway 3520 Benchtop, equivalent or better)	01

9	<b><u>Peristaltic pump (with tubing)</u></b>  Motor type: Stepping servo motor RPM: 0.01 to 600 Flow capacity: 0.01 to 3000 mL/min Resolution: 1/50,000 Touch screen: 7 inches Power Input: AC 220/230V, 50/60Hz Program control of: Flow rate, time, volume, rpm  (Ex. Programmable Peristaltic Pump, Model: EMP-2000S by EMS Tech, South Korea, equivalent or better)	01
10	<b><u>Analytical balance with density measurement kit</u></b>  Weighing Capacity (g): $\geq 200$ Readability (g): 0.0001 Repeatability ( $\leq$ g): $\pm 0.0001$ Mass in air (g): $\geq 0.25$ Aquatic buoyancy: $< -0.125$  (Ex. Model: FA/MP series (FA2104J), USA KINO Industry CO. Ltd. Or better)	01
11	<b><u>Heating tap and voltage controller</u></b>  <u>Heating tap:</u> Size: width: 3-4 cm, length: 2 m  <u>Voltage controller:</u> Variable voltage for temperature control from 25 to $\geq 200^{\circ}\text{C}$	05  01