iCAP 6300 ICP Spectrometer *(Acquired under CARE 2007-08, PI- Dr. Tarun Gupta, CE)*

The use of Inductively Coupled Plasma source (ICP) and Atomic Absorption (AA) are the accepted and most powerful techniques for the analysis of and quantification of trace elements in both solid and liquid samples. Applications range from routine environmental analyses to the materials industry, geological applications to clinical research and from the food industry to the semiconductor industry.

The iCAP 6300-Duo can simultaneously detect 66 Elements with detection limits less than 1µg/L. The plasma is easier to ignite and can operate with a much wider range of sample types. The Duo instrument provides flexibility, with extreme detection limits achievable in axial mode and reduced interference in Radial mode.

### Technical Specification

| Spectrometer       | Echelle type  
|--------------------|---------------  
|                    | 52.01 grooves/mm ruled grating  
|                    | 383 mm effective focal length  
|                    | 0.5° UV fused silica cross dispersion prism  
| Wavelength range   | 166 - 847 nm  
| Spectral bandpass  | 7 pm at 200 nm  
| Detector           | High performance CIDes5 chip  
| RF source          | 27.12 MHz solid state  
|                    | 750 - 1500 watts output power  
|                    | (Duo restricted to 1360 watts)  
| Sample pump        | 0-channel, 12 roller peristaltic.  
|                    | Speed 0 - 125 rpm  
| Plasma gas         | Fixed 12 L/min, argon  
| Nebulizer gas      | Pressure control, from 0 - 0.4 MPa  
| Auxiliary gas      | 4 fixed flows, 0, 0.5, 1.0 and 1.5 L/min  
| Standard sampling kit | Concentric glass nebulizer  
|                    | Glass cyclone spray chamber  
|                    | Semi-demanountable torch  
|                    | 1.5 mm bore quartz injector (Radial version)  
|                    | 2 mm bore quartz injector (Duo version)  
| Dimensions         | 840 W x 750 D x 590 H  

### Detection Limit range in µg/L

<table>
<thead>
<tr>
<th>Number of elements</th>
<th>Elements</th>
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<tbody>
<tr>
<td>≤ 0.01</td>
<td>Mg, Ca, Si, Be, Li, Sc, Ba, Eu, Yb, Lu</td>
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<tr>
<td>&gt; 0.01 and ≤ 0.1</td>
<td>Y, Mn, Cd, Al, Er, Zn, Dy, Na, Ti, Ho, Tm, Zr, La, Hg, C, Ag, K</td>
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<tr>
<td>&gt; 0.1 and ≤ 1</td>
<td>Mo, Fe, V, Ni, Re, Co, Tb, Nd, Gd, E, Sm, Nb, Cu, W, Au, Hf, H, Ru, Ge, Pb, Pt, Sn, Ti, Pd, P, Pb, Th, Ge, Te, Ir, Os, Pt, Ta, Se, Rh, Nb, As, U, Si</td>
</tr>
<tr>
<td>&gt; 1</td>
<td>Bi, Ge, Se, I, In, Cs</td>
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</tbody>
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