

Smart Laser & Plasma Systems

LS-DP-LIBS

Elemental composition measurement system



What is LS-DP-LIBS?

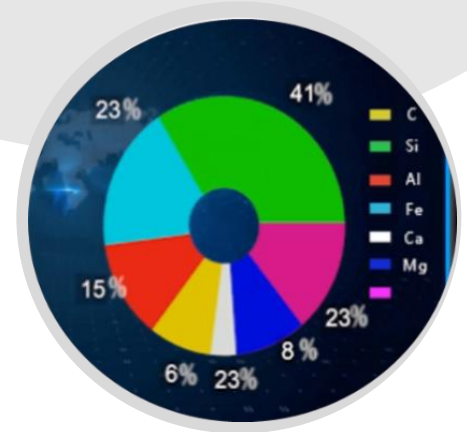
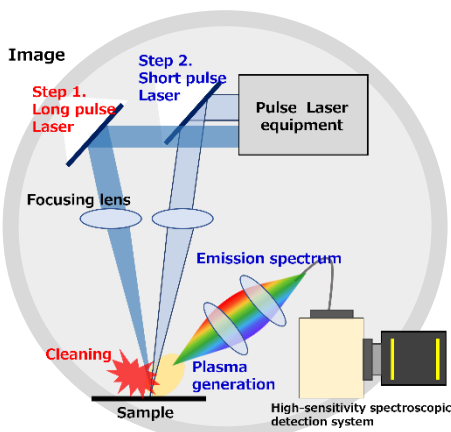
The LS-DP-LIBS is a LIBS system that eliminates the need for pretreatment of the target by using long and short laser beams and can measure multiple components simultaneously in a few seconds. The long-pulse laser beam stabilizes the surface of the target and the generated plasma, while the short-pulse laser beam is responsible for plasma generation, enabling stable and accurate measurement.

Applications

- Capable of simultaneous measurement of multiple components
- High response and real-time measurement
- No need for target pretreatment
- Auto focus function
- No sample shape required
- On-line measurement on the process is available for process control and monitoring

Equipment

- Two laser beams with different pulse-widths are focused on a target using a focusing lens.
- The emission signal from the target is detected by a combination of a spectrometer, an ICMOS (or ICCD) camera, and auxiliary equipment.

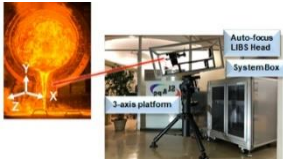
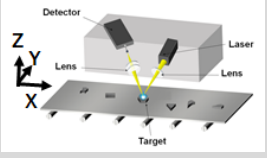
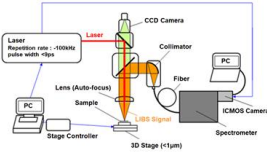


Specification

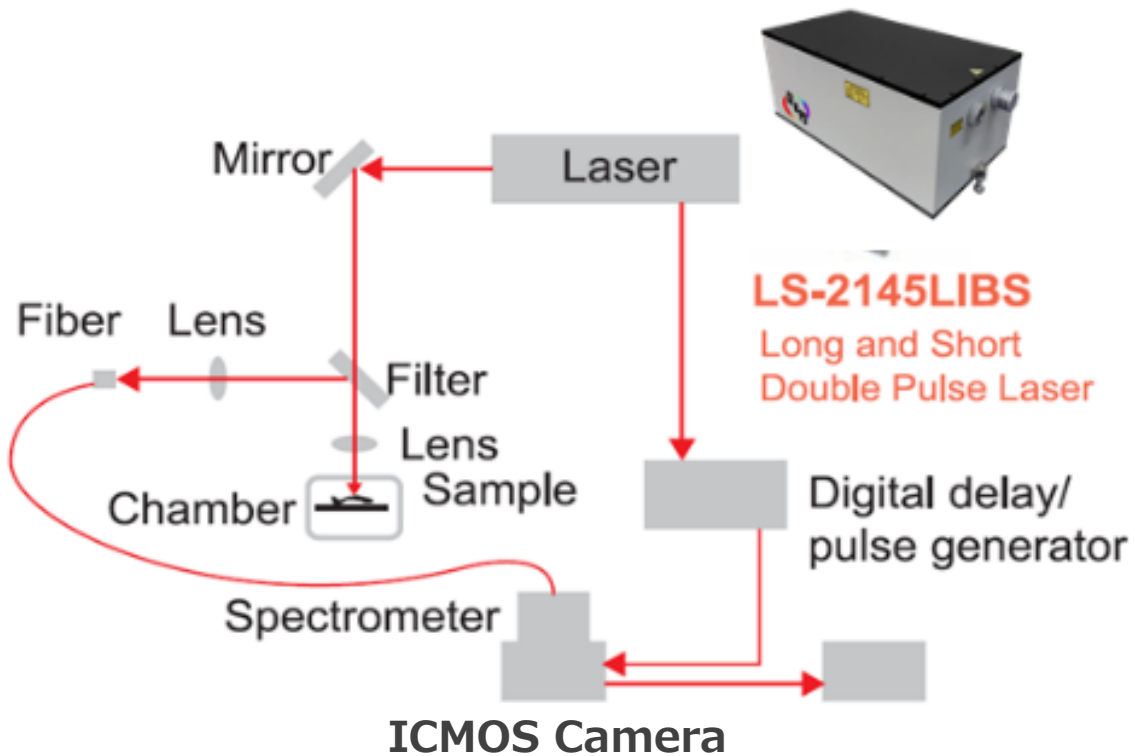
Custom design is also possible.

| | |
|---------------------|---|
| Laser wavelength | 1064nm |
| Method | Long Short – Double Pulse- Laser-induced breakdown spectroscopy (LS-DP-LIBS) |
| Target | High temperature furnace, Burner, Rubber, Semiconductor manufacturing equipment, etc. |
| Detectable elements | Temperature (Room temperature~1850°C), Fe, C, Mn, Al, S, Ni, Co, Li, etc. |
| Camera | Auto focus function |
| Detector | ICMOS, ns-gated CCD line sensor |
| Responsiveness | 10-1000Hz |



Specification by type

| Image | Type | Product Number | Description |
|--|---------------|----------------|---|
|  | Remote LIBS | R-LIBS-1 | <p>Automatic object detection by 2D distance meter</p> <p>Laser irradiation position control</p> <p>Automatic focus and measurement by auto focus</p> <p>Measurement object : molten metal, high temperature material, plant wall, etc.</p> <p>Response time : Depends on system</p> <p>Detection sensitivity : Depends on measurement component</p> |
|  | Built-in LIBS | Bi-LIBS-1 | <p>Automatic object detection by 2D distance meter (X, Y, Z display of object on conveyor belt)</p> <p>Laser irradiation position control (X, Y direction)</p> <p>Automatic focus and measurement by auto focus (Z direction)</p> <p>Measurement object : metal, rubber, non-metal, mineral, etc.</p> <p>Response time : Depends on system (2D rangefinder : ~30Hz)</p> <p>Detection sensitivity : Depends on measurement component</p> |
|  | Mapping LIBS | M-LIBS-1 | <p>Spatial resolution : ~1 μm</p> <p>Mapping speed : - 25 minutes (100x100)</p> <p>Measurement target : steel, metal, carbon materials, etc.</p> <p>Detection sensitivity : Depends on measurement component</p> <p>Display : 2D, contour, etc.</p> |

Example System configuration



Related product

| Image | Product name | Part number | Description |
|--|--------------------|--------------|---|
|  | ICMOS Camera | ICMOS-LIBS-1 | Effective pixels : 1920(H) × 1200(V) A/D converter resolution : 12 bits Input mount : C mount Image intensifier size : Φ18mm |
|  | Fiber spectrometer | OFS-LIBS-1 | Number of channels: 1-12 channels (expandable) Diameter of fiber bundle core : Φ200 μm Solarization resistance fiber : 180-1200nm Wavelength : 180-500nm (-0.01nm/pixel) Effective pixel : 2048x1 |



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