

# LIBS DESKTOP ANALYZER STEEL INDUSTRY

APPLICATION NOTE LIBS-011

## Background

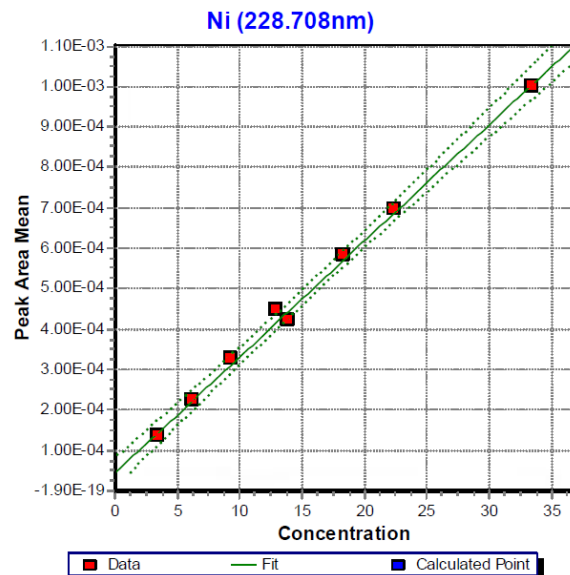
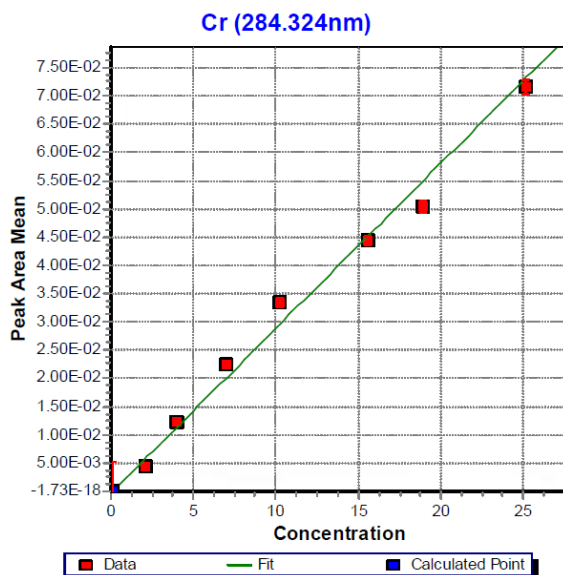
The TSI® LIBS Desktop Analyzer use of Laser Induced Breakdown Spectroscopy (LIBS) is well known in its ability to achieve accurate and fast elemental analysis of materials.

In the steel industry, the properties of LIBS that are particularly beneficial include:

- The ability to analyze conductive and non-conductive materials in the instrument.
- The ability to analyze small samples and inclusions in samples using a focused laser beam.
- The ability to “burn off” crusts and surface impurities using the ablating power of the laser prior to analysis.
- The ability to obtain elemental mapping across a surface using XY sample scanning.

A broad range of elements can be accurately measured in steel and slags using the TSI LIBS Desktop Analyzer including both major components (Fe, C, Cr, Ni, Ti...) and minor components (K, Ca, Mg, Al, Si ...).

For slag samples the material is typically crushed and pressed into pellets prior to analysis.

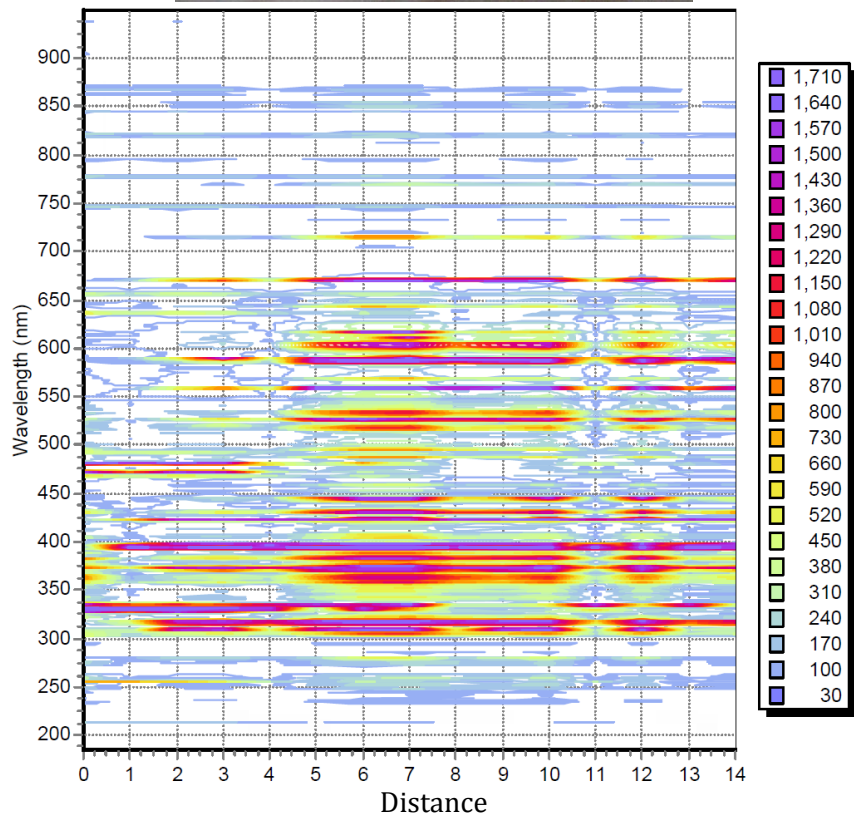


Being of compact size and requiring no services apart from power, the TSI LIBS Desktop Analyzer can easily be located close to the process thereby improving sample analysis times and lowering production costs.

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## Scanning and Imaging Applications

With the TSI LIBS Desktop Analyzer scanning and imaging ability there are many further applications. In the example below, variations in steel plate are routinely analyzed with a TSI LIBS Desktop Analyzer on a factory floor.



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## Analysis Benefits

- A low level of sample preparation is required which improves lab efficiency and lowers production costs.
- Simultaneous analysis of all detectable elements.
- Analyze conductive and non-conductive materials in the one instrument.
- Analyze small samples as well as inclusions in the samples.
- Analyze coating or alternatively use “burn off” prior to analysis.

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## TSI LIBS Desktop Analyzer Features

- Intuitive design allows easy operation in any environment.
- Complete software control over laser power, detector exposure, and analysis times.
- Lab manager restricted access to instrument settings.
- Average multiple laser pulses.
- Overlay spectra for easy comparison.
- Peak searching using a database of >10,000 emission lines.
- Multiple report saving and export options.
- Graphical interface for elemental mapping.
- Fully supported worldwide.



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<b>USA</b>	<b>Tel:</b> +1 800 874 2811	<b>India</b>	<b>Tel:</b> +91 80 67877200
<b>UK</b>	<b>Tel:</b> +44 149 4 459200	<b>China</b>	<b>Tel:</b> +86 10 8251 6588
<b>France</b>	<b>Tel:</b> +33 4 91 11 87 64	<b>Singapore</b>	<b>Tel:</b> +65 6595 6388
<b>Germany</b>	<b>Tel:</b> +49 241 523030		