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Multi-Point Raman Spectroscopic Analysis Via Optical Multiplexing

One source/detector enables long-range, multi-location Raman monitoring for distributed environmental and industrial sensing.

Researchers at Purdue University have developed a new optical Raman spectroscopy system. Current Raman spectroscopy techniques are not suited for large spatial scales and field - relevant chemical concentrations. The Purdue technology enables Raman analysis at multiple spatially-dispersed locations using a single source-detector unit, facilitating long-term, spatially dispersed monitoring and enabling low cost-per-test-point sensing. This invention has applications to sensing of environmentally- and industrially-relevant compounds, particularly when analysis/monitoring is required at multiple points or over large spatial extent.

Technology Validation: In a series of tests, Raman analysis was successfully carried out from a single source and detector unit to examine test points 1 to 16 m from the unit. Modelling of instrument performance demonstrates the potential to reach 1000-2000 m at field-/industrially-relevant concentrations.

Advantages

- single detector

- long-term

- spatially-dispersed analysis

Applications

- sensing of environmentally-, industrially-relevant compounds

TRL: 4

Intellectual Property:

Technology ID
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Category
Materials Science & Nanotechnology/Materials Testing & Characterization Tools
Materials Science & Nanotechnology/Nanomaterial Characterization & Imaging Tools

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