**Overview:** Laser induced fluorescence (LIF) used to distinguish pure substances from a distance of 22 m simultaneously emitted laser pulses (266 & 355 nm) temporally shifted by two tilted mirrors. Pulse width: 0.7 ns, energy: 0.01-200 μJ, rate: 100 Hz. Training of different classification algorithms. Automatic classification in 3-4 s. Accuracy over 95%. Optional scaling or averaging. Continuous measurements possible. More than 40 substances in database. GUI with simple and detailed results.

**Methods:** Neural network

- **Spectral Classification**
  - Accuracy: 0.9979
  - Bacteria: 1124, Chemicals: 999, Plants: 4

- **Temporal Classification**
  - Accuracy: 0.7813
  - Bacteria: 872, 65, 118
  - Chemicals: 96, 227, 77
  - Plants: 200, 92, 938

- **Combined Classification**
  - Accuracy: 0.9988
  - Bacteria: 1124, 1
  - Chemicals: 1000
  - Plants: 2, 1, 1247

**References:**

**Visualization of the single spectra**

**Score:**
- Bacteria: 99%
- Chemicals: 99%
- Plants: 99%

**Timestamp:** 20190130_141403