



## Deposition of Samples and Sample Matrix for Enhanced Sensitivity of MALDI Mass Spectrometry

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**WARF: P04151US**

Inventors: Max Lagally, David Barnes, Bradley Larson, Martha Vestling

**The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in developing a method of producing a MALDI target composed of small, homogeneous sample spots.**

### Overview

Matrix-assisted laser desorption/ionization (MALDI) mass spectrometry is commonly used to identify and characterize proteins and to sequence DNA. A key step in this process involves creating sample spots by depositing a sample of the molecule to be analyzed onto a flat, stainless steel target and then depositing a saturated matrix solution on top. However, current spotting techniques produce relatively large, non-homogeneous sample spots, limiting broader use of MALDI mass spectrometry.

### The Invention

UW-Madison researchers have developed a method of using an ultrasonically actuated microplotter to deposit both the sample and the overlying matrix, resulting in a MALDI target composed of small, homogeneous sample spots. See WARF reference number P01201US for more information about the microplotter itself. This technique results in smaller sample spots than can be obtained with current methods, leading to better mass spectrometry readings. Researchers in both university and industrial settings could use this method for high throughput, high-sensitivity MALDI analyses.

### Applications

- High throughput, high-sensitivity MALDI analyses of proteins or DNA

### Key Benefits

- Very small sample spots (less than 50 microns diameter) result in improved signal-to-noise ratios, require less sample and reduce waste, and allow for higher sample density on a single substrate.
- Various spot spacings are possible; even a combination of spots and lines may be deposited.
- Any matrix solution can be used.
- Provides excellent control when matrix solutions containing high percentages of organic solvents are deposited
- Rapid evaporation allows the matrix to be almost dry when it hits the target, helping to prevent spot mixing.
- Ultrasonic action reduces clogging caused by rapid crystallization of matrix solutions.
- Contamination and carryover from spot to spot are reduced because the microplotter has no contact with the surface.
- Matrix may be deposited on tissue slices or other cellular material to allow MALDI imaging and to minimize migration of the

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**WARF**  
Wisconsin Alumni Research Foundation

| [info@warf.org](mailto:info@warf.org) | 608.960.9850

#### For More Information About the Inventors

- [Max Lagally](#)

#### Related Technologies

- [See WARF reference number P01201US for information on the microplotter itself.](#)

#### Tech Fields

- [Analytical Instrumentation, Methods & Materials : Mass spectrometry.](#)
- [Research Tools : Detection](#)

For current licensing status, please contact Jeanine Burmania at [jeanine@warf.org](mailto:jeanine@warf.org) or 608-960-9846

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