

## Tandem Mass Spectrometer Uses Ion Traps

**Track Code:** 2016-COOK-67317

**Categories:**

- Chemical Engineering
- Chemistry and Chemical Analysis

**Keywords:**

- Chemical Engineering
- Chemistry and Chemical Analysis
- Ion Trap
- Mass Spectrometry

Accurately assessing an extremely small quantity of a substance challenges researchers in many fields, notably in chemistry and physics. Mass spectrometers have been used in this endeavor for decades, with modern spectrometry techniques dating back nearly one hundred years. However, modern mass spectrometers, while quite powerful, are intricate in nature. They typically include multiple analyzer instruments such as a triple quadrupole system or hybrid Q-TOF instruments. Simplifying the analyzing instruments is a key focus of improving mass spectrometers, which would allow for better on-site analysis.

Researchers at Purdue University have developed a new method of trapping ions in a mass spectrometer. Using both a radio frequency signal and two alternating current signals, tandem mass spectrometer experiments can be performed with an ion trap. In addition, further developments could yield minimal interference in the tandem mass spectrometer spectra, which would allow various scans, such as precursor ion and neutral loss, to be performed with a high degree of accuracy. Thus, this improvement not only helps simplify the analyzer instruments, but makes in situ analysis easily accessible.

**Advantages:**

- Simplified analyzer instruments
- Valuable for on-site analysis

**Potential Applications:**

- Analytical chemistry
- Physics

**People:**

- Cooks, Robert Graham (Project leader)
- Pulliam, Christopher

- Snyder, Dalton Thomas

**Intellectual Property:**

**Application Date:** May 1, 2018  
**Type:** NATL-Patent  
**Country of Filing:** United States  
**Patent Number:** 11,348.778  
**Issue Date:** May 31, 2022

**Application Date:** April 27, 2022  
**Type:** CON-Gov. Funding  
**Country of Filing:** United States  
**Patent Number:** (None)  
**Issue Date:** (None)

**Application Date:** November 2, 2016  
**Type:** PCT-Patent  
**Country of Filing:** WO  
**Patent Number:** (None)  
**Issue Date:** (None)

**Application Date:** April 13, 2016  
**Type:** Provisional-Patent  
**Country of Filing:** United States  
**Patent Number:** (None)  
**Issue Date:** (None)

**Application Date:** November 2, 2015  
**Type:** Provisional-Patent  
**Country of Filing:** United States  
**Patent Number:** (None)  
**Issue Date:** (None)

**Contact OTC:**

Purdue Office of Technology Commercialization  
The Convergence Center  
101 Foundry Drive, Suite 2500  
West Lafayette, IN 47906

Phone: (765) 588-3475  
Fax: (765) 463-3486  
Email: [otcip@prf.org](mailto:otcip@prf.org)