



Matrices and systems for preservation of biomolecules in vacuum

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The Invention

UW-Madison and Morgridge Institute researchers have identified developed an improved method for depositing samples on electron microscopy (EM) grids. The technology leverages a modified mass spectrometer to purify, select, and precisely control the spatial location of sample-containing ion beams. Here, the researchers have identified chemical landing matrices (e.g., liquids) that can be used to coat standard EM grids. Exemplary liquids include PEG, TE, PPG, TritonX, and diglycerol. The liquid is applied to the EM grid where it serves to preserve and protect the structural integrity of deposited particles. Thus far, the researchers have successfully demonstrated the landing and subsequent EM imaging of numerous proteins using a modified mass spectrometer in combination with the liquid-treated EM grid. Given the variety of matrices identified by the researchers, there is an opportunity to tailor the liquid to the sample, such that the resulting EM image is optimized.

Additional Information

For More Information About the Inventors

- [Joshua Coon](#)

Publications

- [Westphall et al. 2022. Three-dimensional structure determination of protein complexes using matrix-landing mass spectrometry. Nat Commun 13, 2276 \(2022\). <https://doi.org/10.1038/s41467-022-29964-4>](#)

Tech Fields

- [Analytical Instrumentation, Methods & Materials : Microscopy](#)
- [Analytical Instrumentation, Methods & Materials : Spectroscopy](#)

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