

From ion beam to image

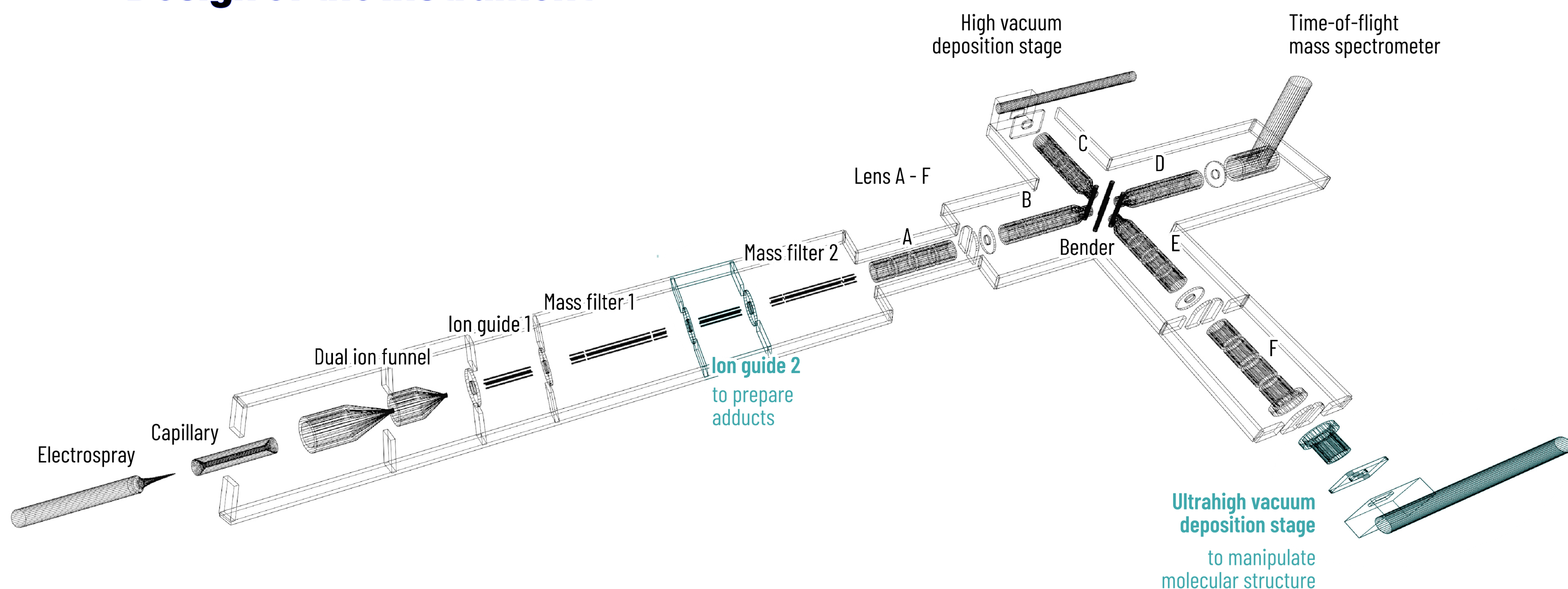
visualizing solvation and molecular interactions by
electrospray ion beam deposition and scanning probe microscopy



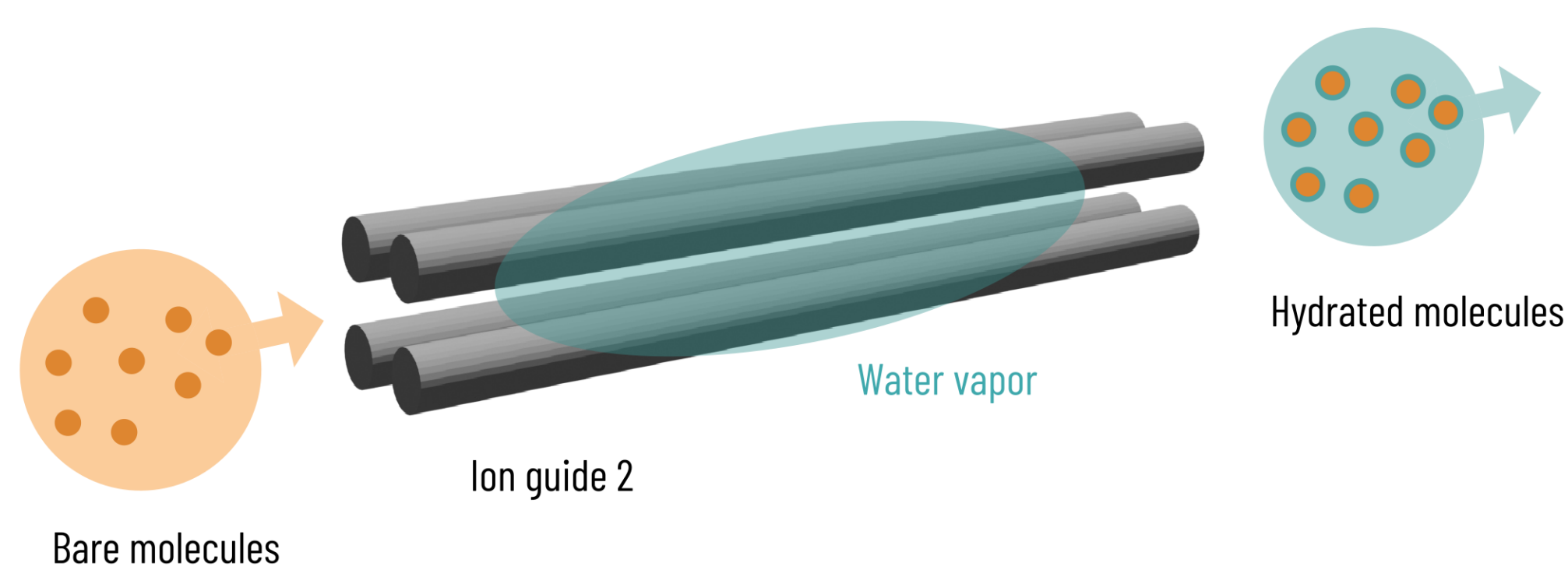
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Design of the Instrument



Controlling Chemical State



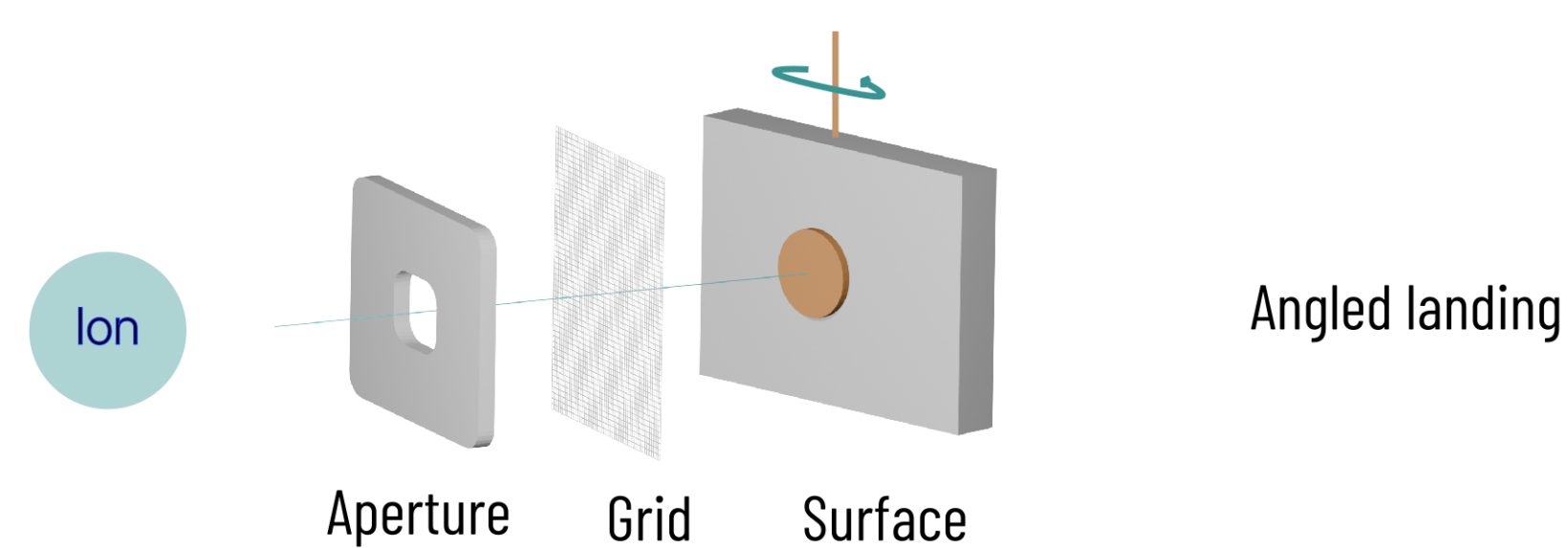
Why?

Preparation and soft landing of **hydrated molecules** allows hydrated molecules to be studied one-at-a-time by direct imaging, revealing the important effect of hydration shells on molecular structures.

How?

Water vapor (up to 10^{-2} - 10^{-4} mbar) is dosed into the 'Ion guide 2' chamber such that the passing ions are decorated with water molecules.

Manipulating Molecular Structure



Why?

Molecules deposited at an angle experience greater **shear forces** compared to perpendicular deposition. These shear forces are expected to mechanically unfold biomolecules upon their landing or to give shear-induced chemical reactions.

How?

The sample holder is tilted for ion deposition, while the ion kinetic energy is adjusted beforehand by applying a retarding potential between aperture and a grid.

Read more

Soft Landing Mass-Selected Ions for Single Molecule Imaging, ACS in focus, X. Wu, D. Kumar, J. Ham, S. Huang, and K. Anggara (May 2025)
DOI:10.1021/acsinfocus.7e9004

Acknowledgement:

