

Generation and detection of mass-selected neutral polypeptide beams

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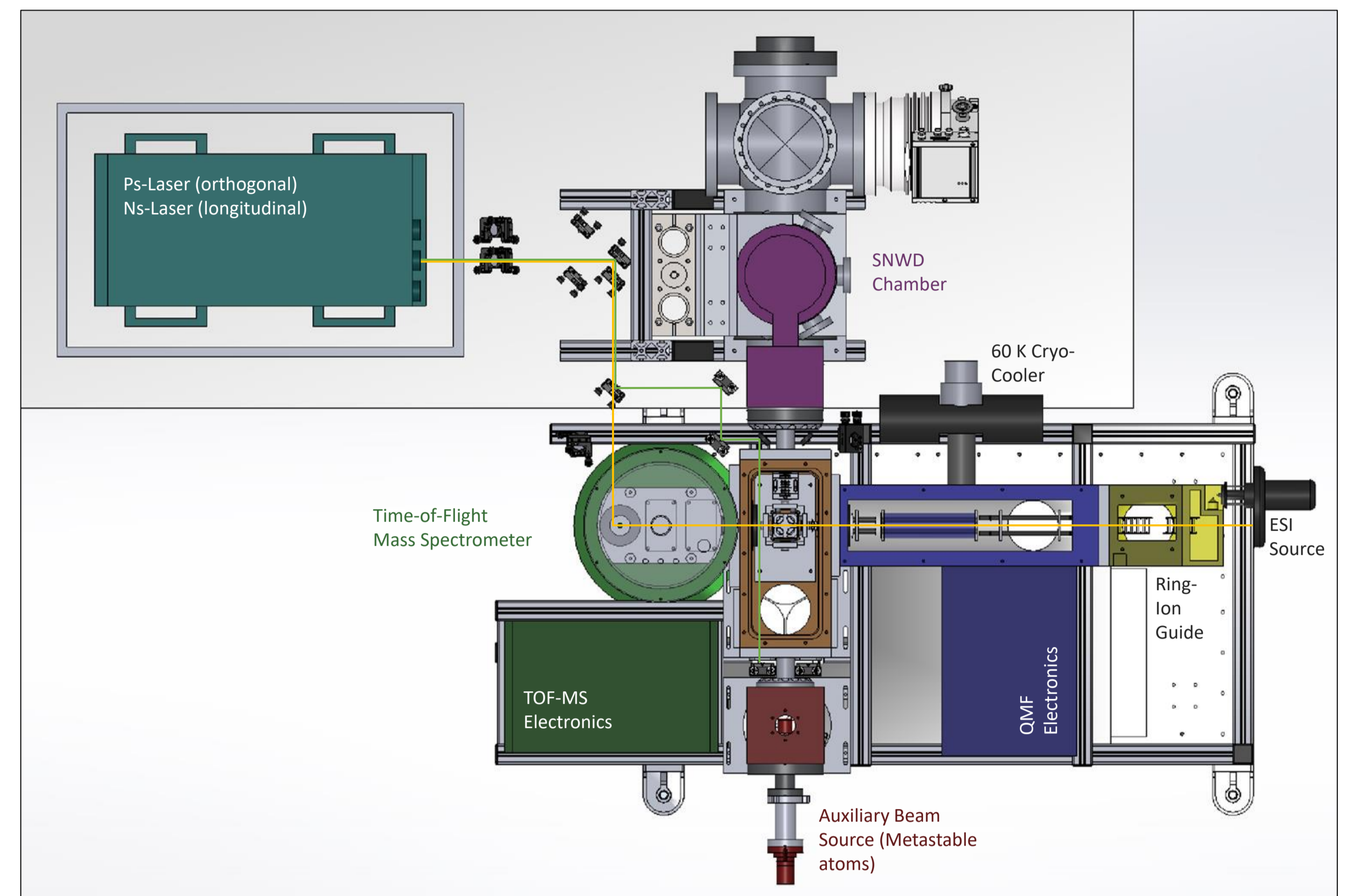
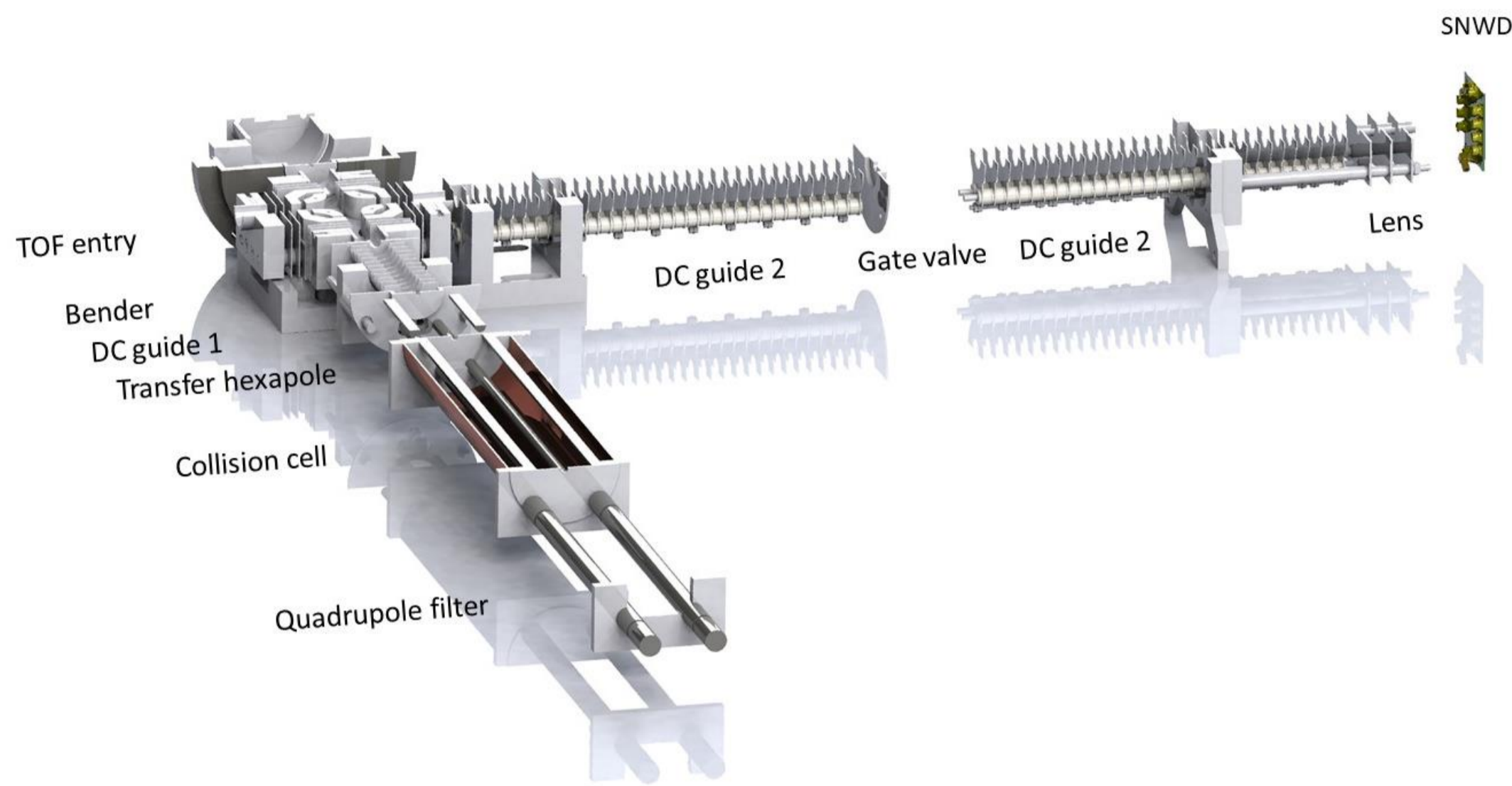
SuperMaMa



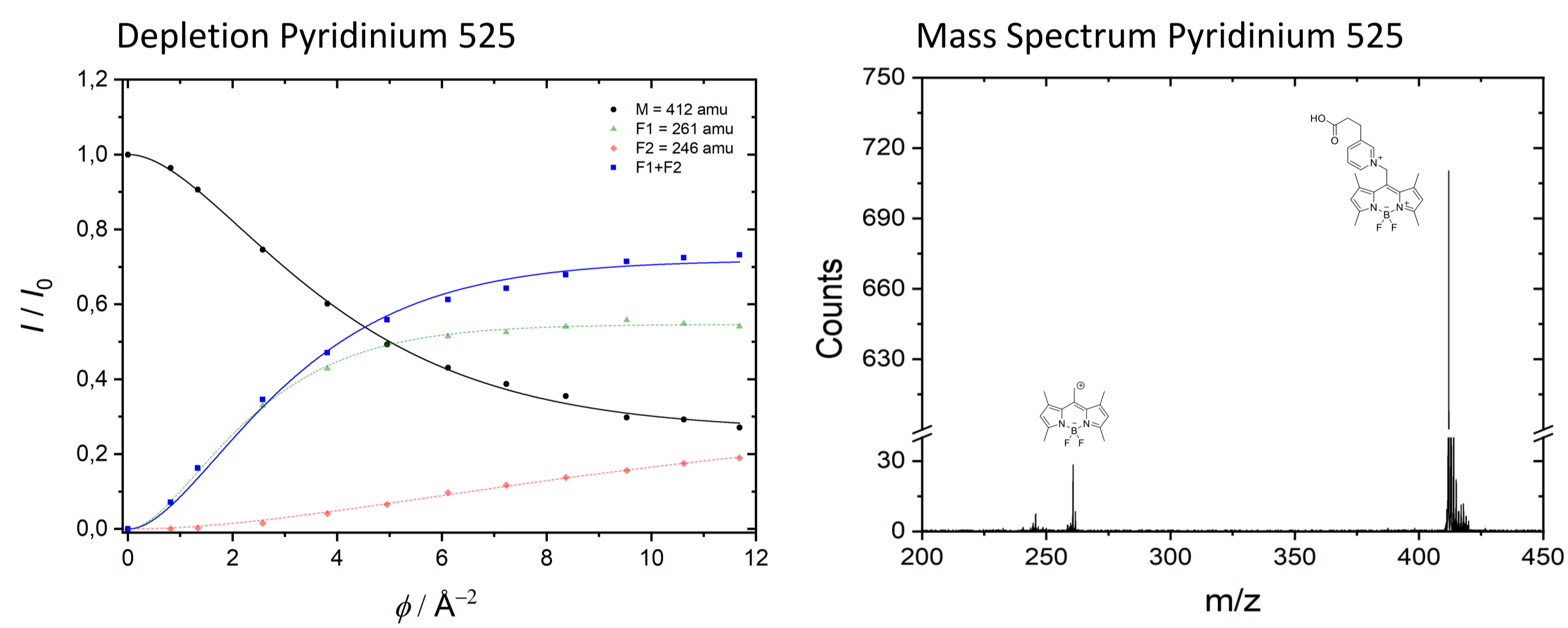
Implementation of Superconducting Nanowire Detectors in Mass Spectrometry & Molecular Analysis

Quantum Tools for Mass Spectrometry and Molecular Analysis

- Superconducting nanowires for **biomolecular detection at low energy**
- Extend the detection range to **neutral and singly charged mass-selected molecular beams**
- Neutralize or ionize molecules by **single/two-photon cleavage**
- Characterize **internal molecular properties** with superconducting nanowire detectors
- Built a **128-pixel superconducting nanowire array (EPFL and Single Quantum)**
- Prepare a mass selected **100 kDa protein beam (MSVISION)**

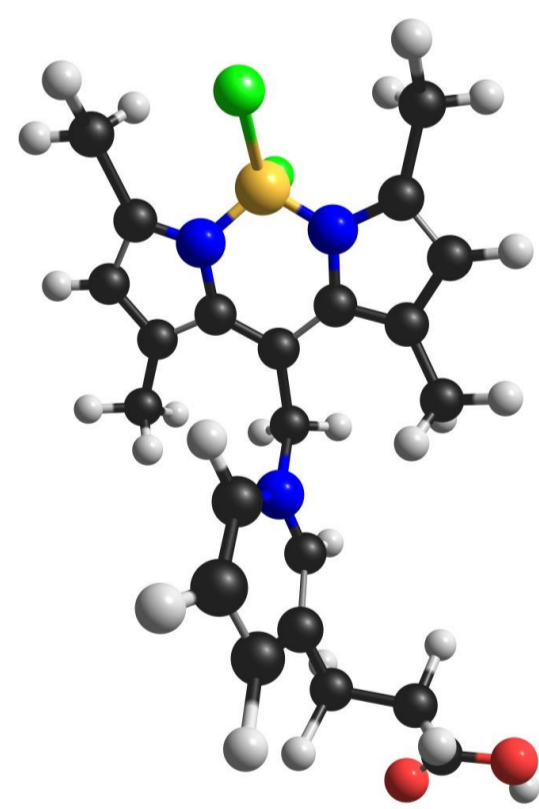


Photoinduced Charge Control



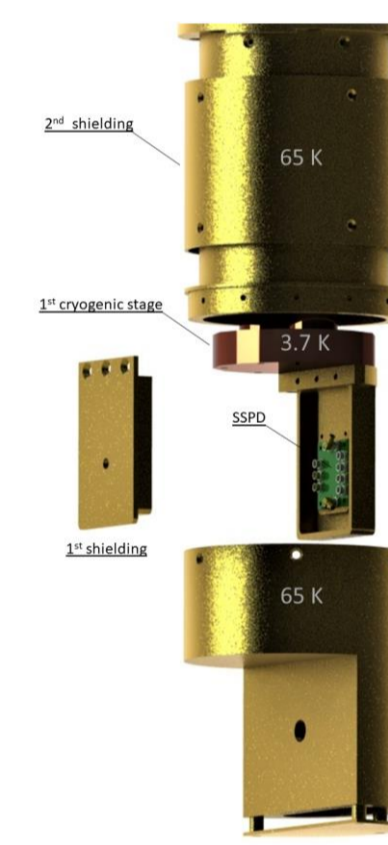
Compound	Structure
20201015	
Pyridinium 525	
20210406	
20211016	
20210128	

- **Photoinduced neutralization** of small peptide with **532nm light**

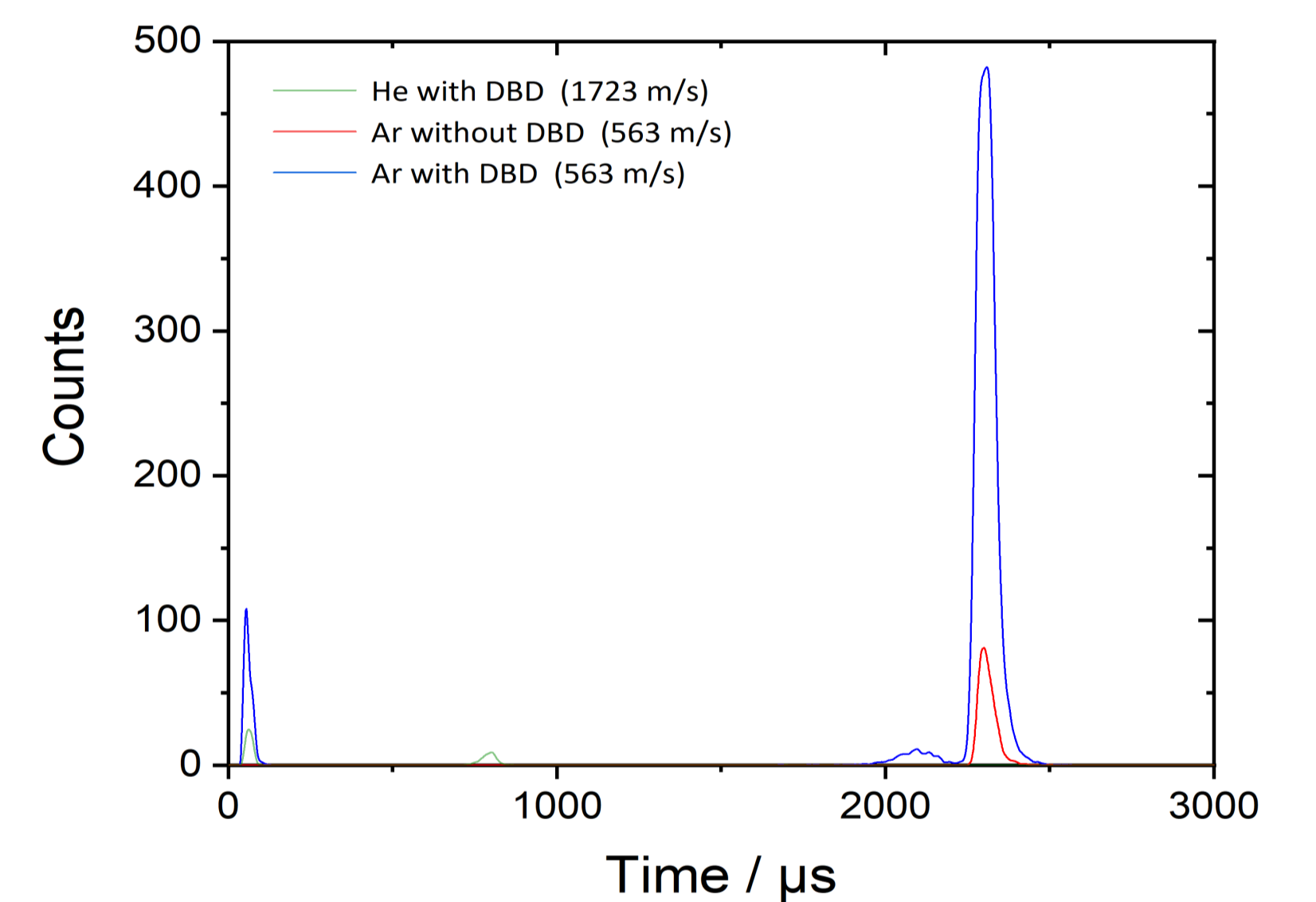


Superconducting Nanowire Detection

- Time of Flight measurement of **neutral metastable noble gas atoms**

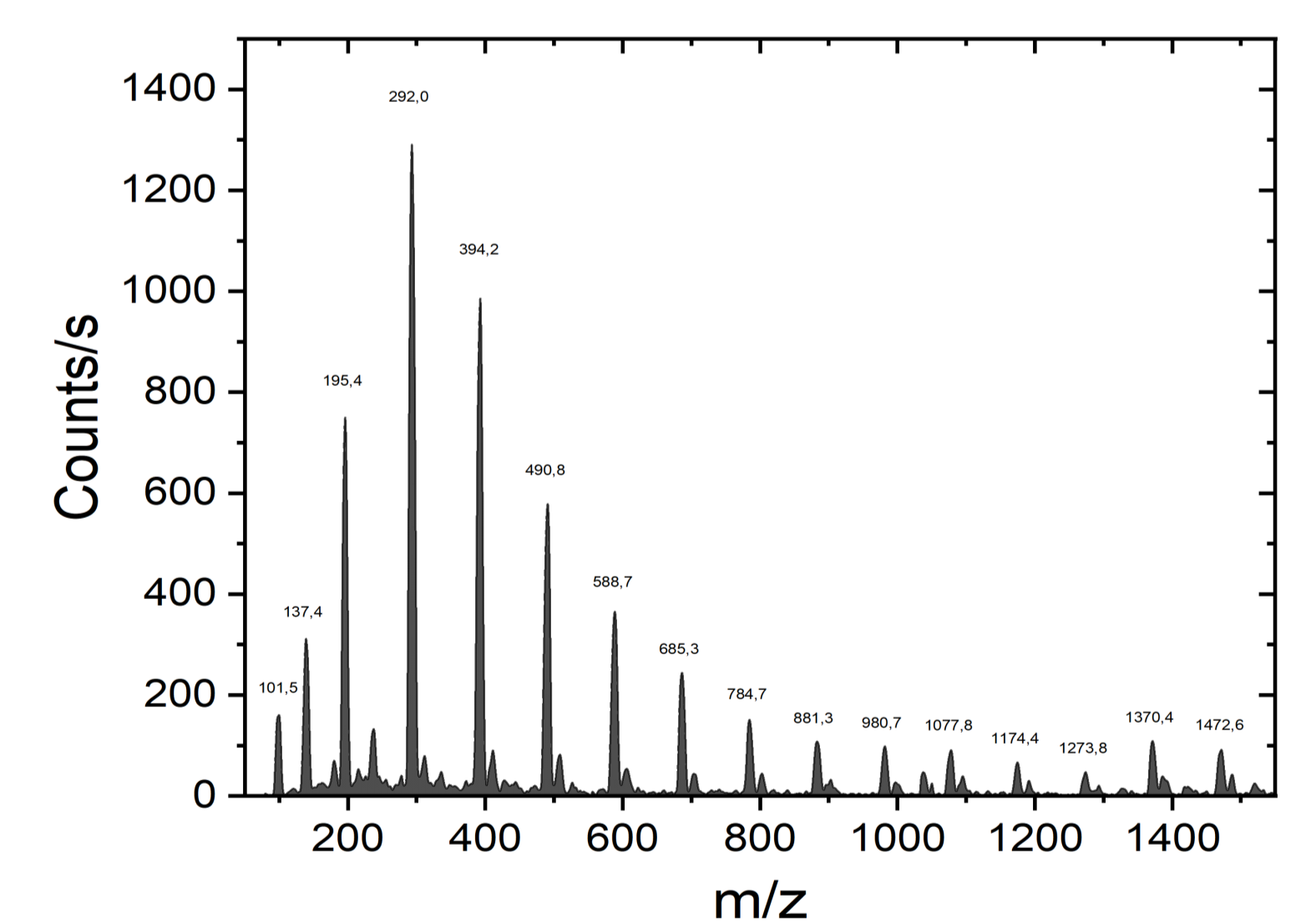
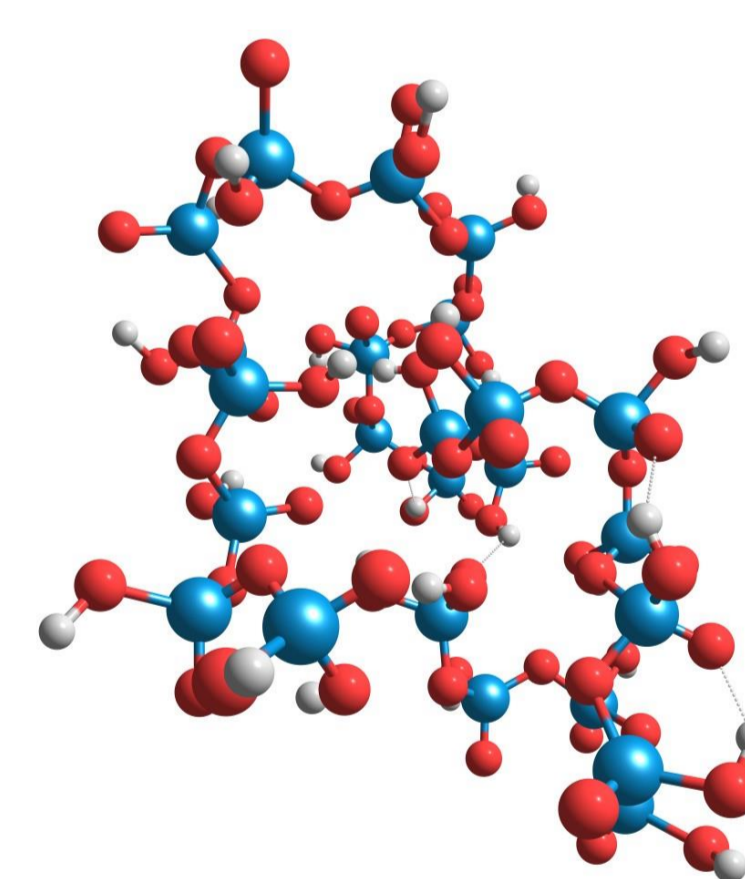


Metastable noble gas atoms



- Singly charged **Phosphoric Acid Cluster**
- $m(\text{PAC}_1) = 98 u \rightarrow E_{\text{kin}} = 180 \text{ eV}$

Phosphoric Acid Cluster



References

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