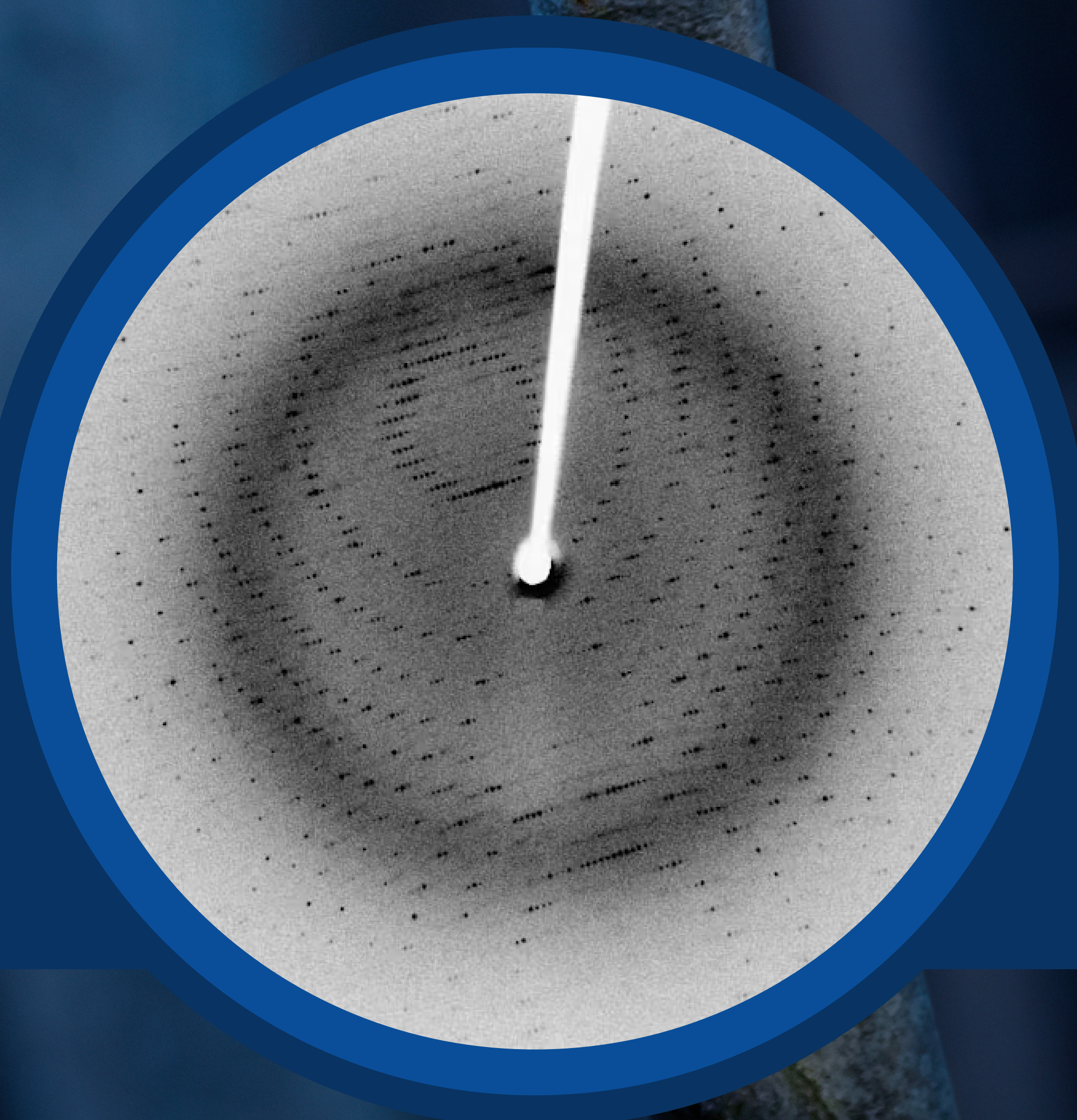
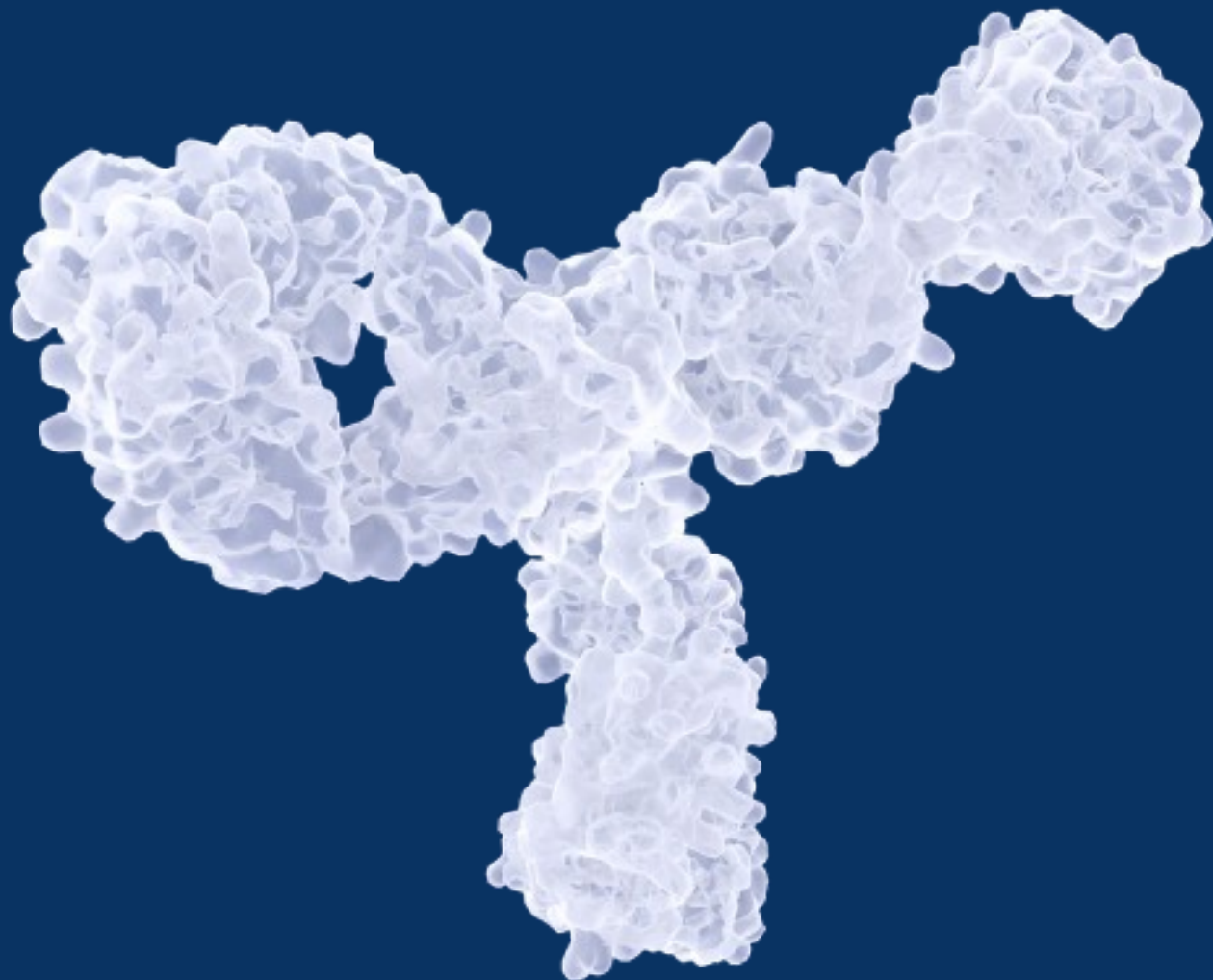


X-RAY CRYSTALLOGRAPHY

Rishika Sharma



PURPOSE



Atomic Structure



Bond Lengths & Angles



Electron Density Map



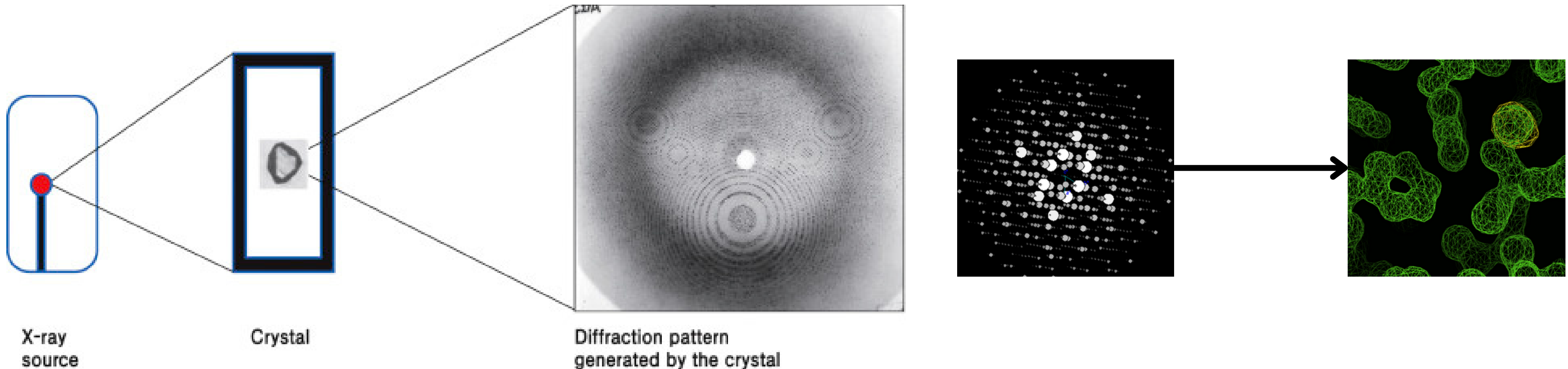
Intermolecular Interactions



Conformational Flexibility

PROCESS

- | | | | | | |
|---|-----------------------|---|----------------------|---|----------------|
| 1 | Crystal Preparation | 4 | Data Collection | 7 | Modelling |
| 2 | X-ray Diffraction | 5 | Processing | 8 | Validation |
| 3 | Detection of Patterns | 6 | Electron Density Map | 9 | Interpretation |



INSTRUMENT

1 Detector

2 X-ray Source

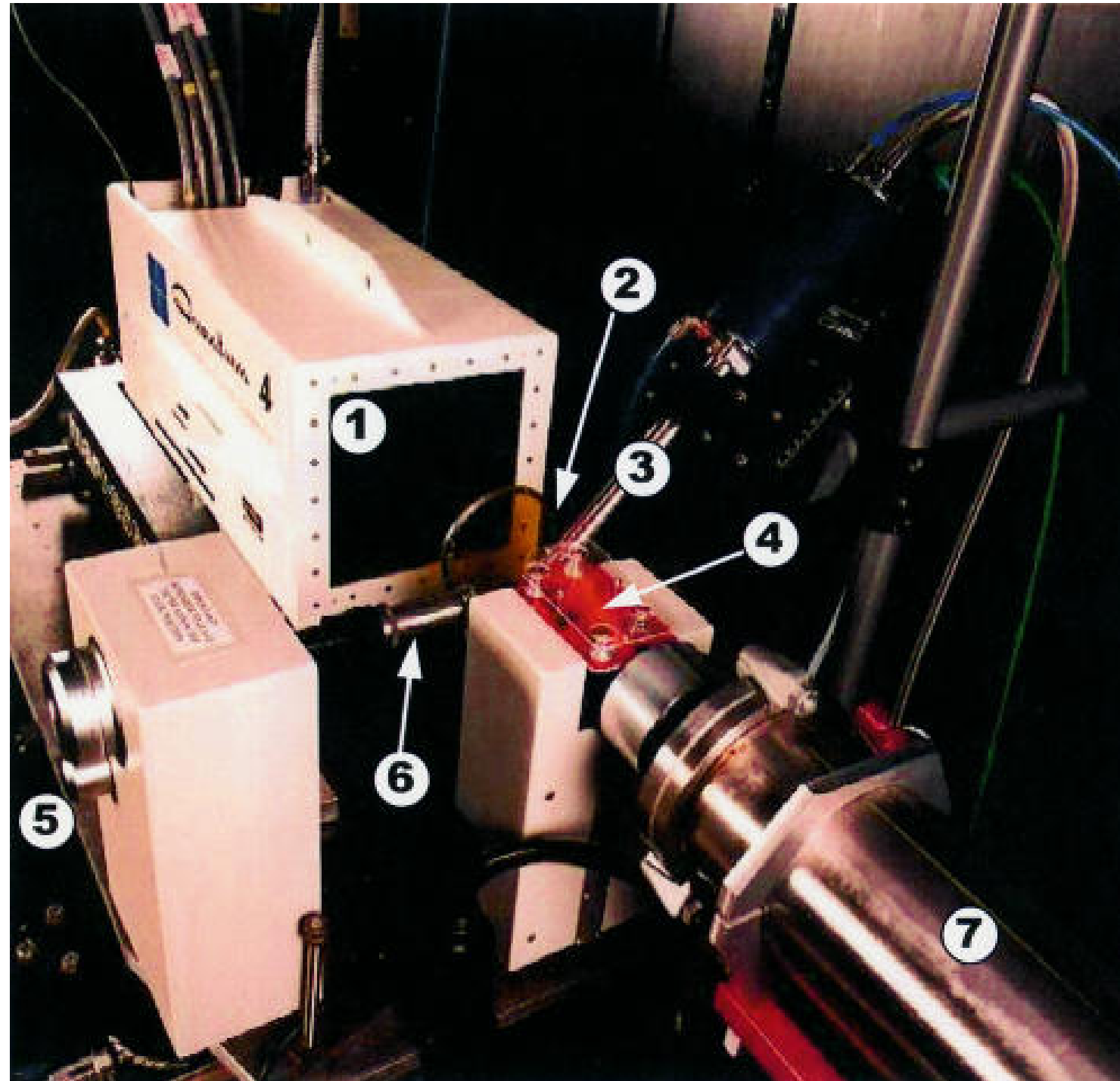
3 Goniometer Head

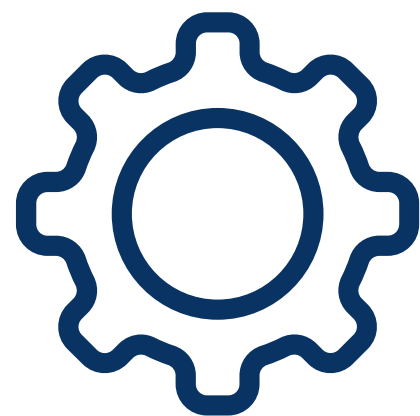
4 Sample Holder

5 Beam Stop

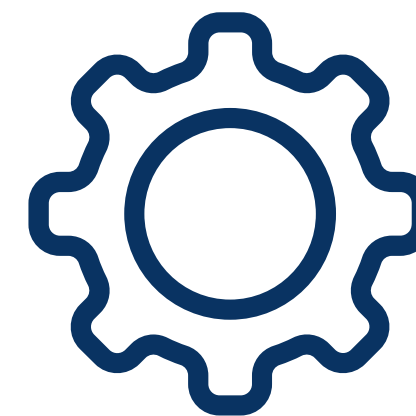
6 Cryo-Cooling System

7 Collimator

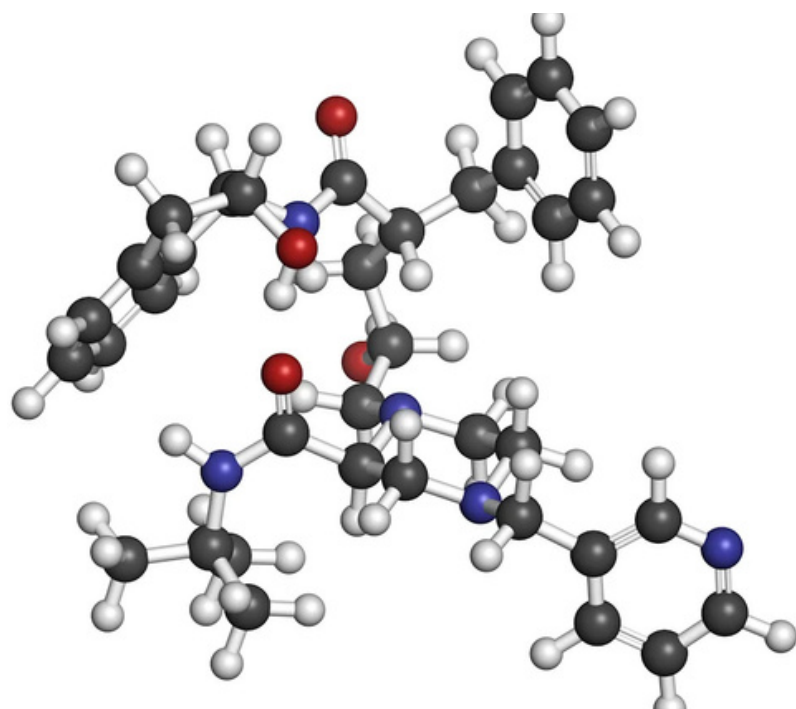




CONTROLS



Positive Control



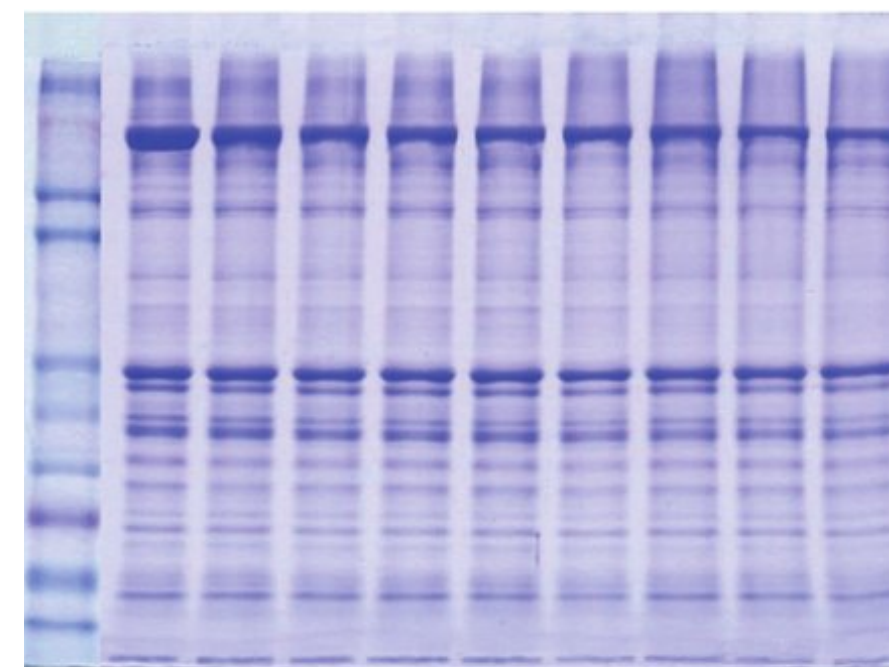
A known crystal
structure

Negative Control



No diffraction pattern

Specificity Control



No contamination

ADVANTAGES & LIMITATIONS

Advantages

- High Resolution
- Structural Information
- Non-Destructive

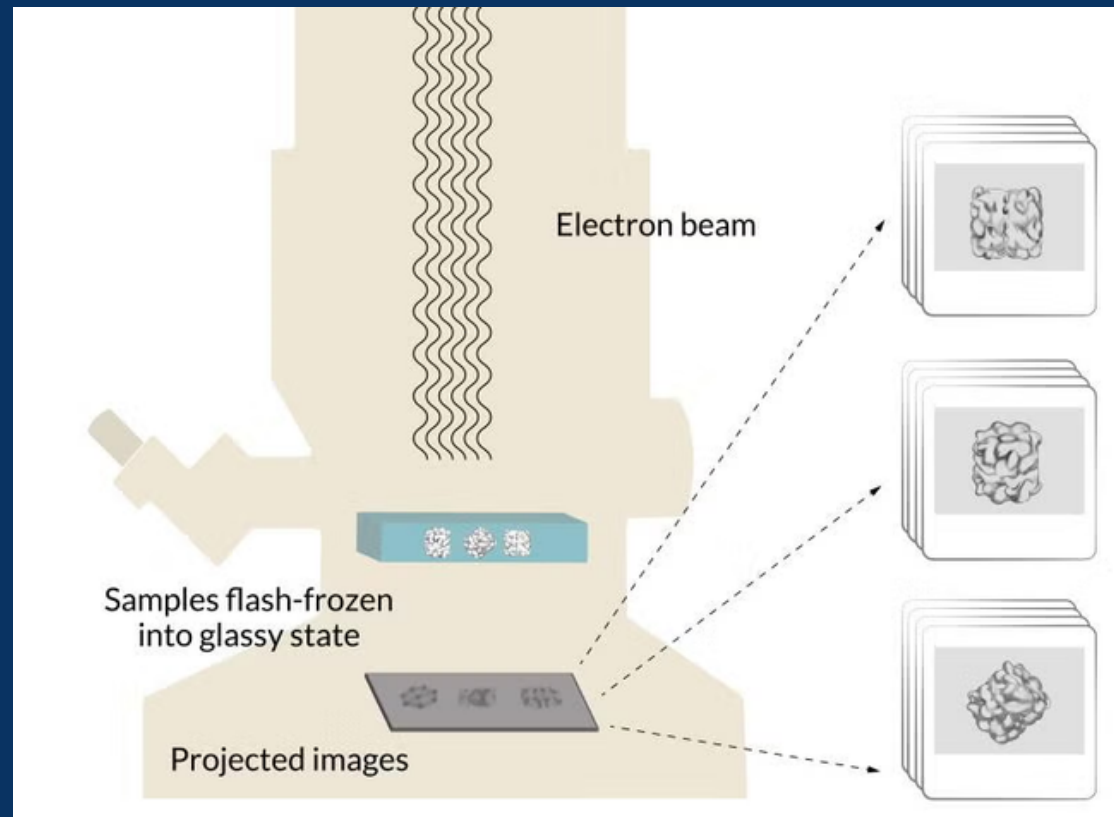


Limitations

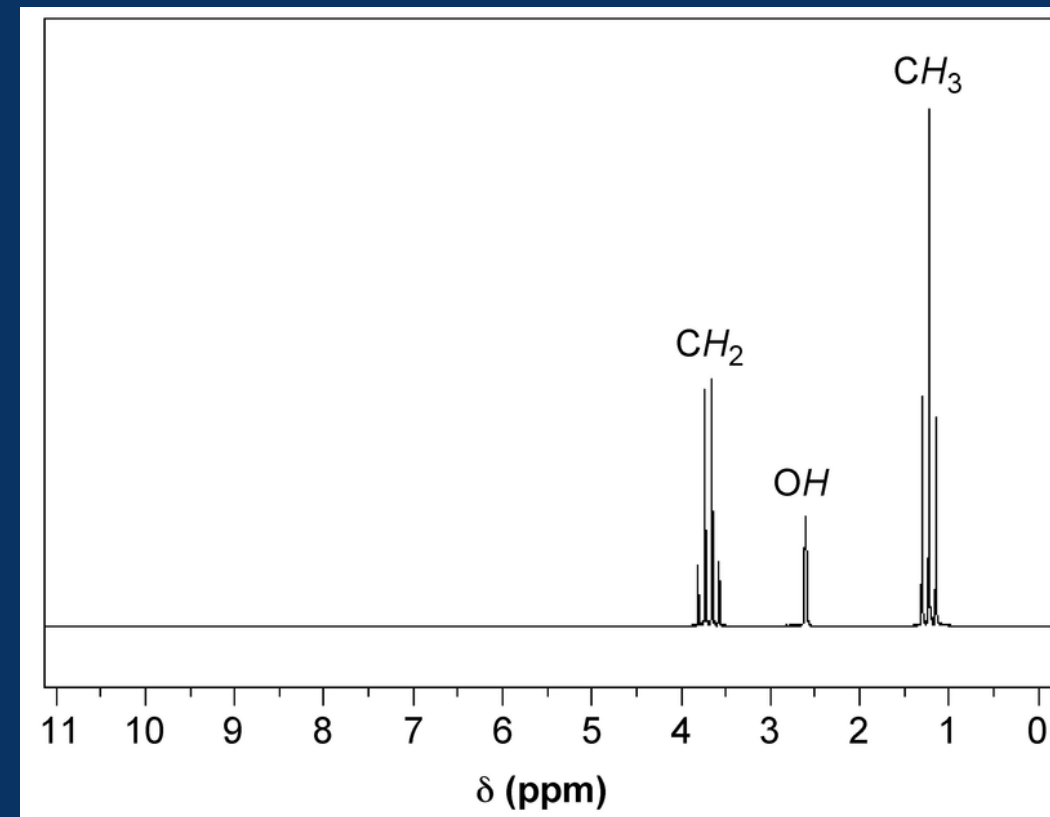
- Static Image
- Phase Problem
- Damage
- Complexity



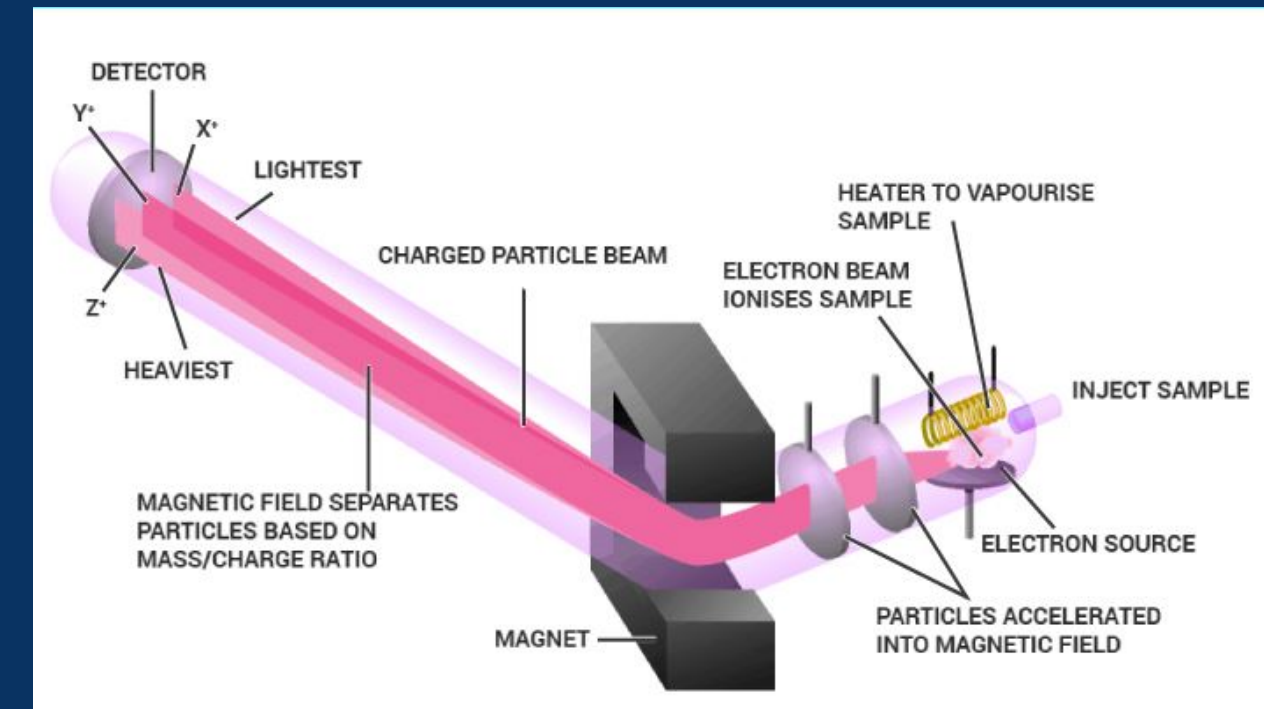
VALIDATION TECHNIQUES



Cryo-Electron
Microscopy



NMR Spectroscopy



Mass Spectroscopy

THANK YOU

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