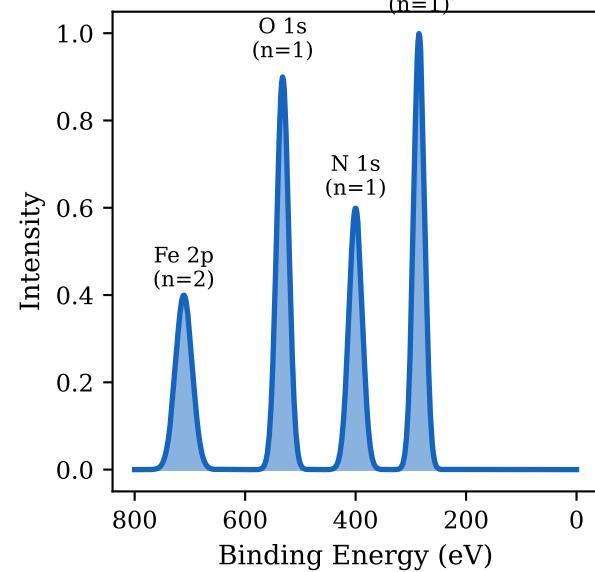
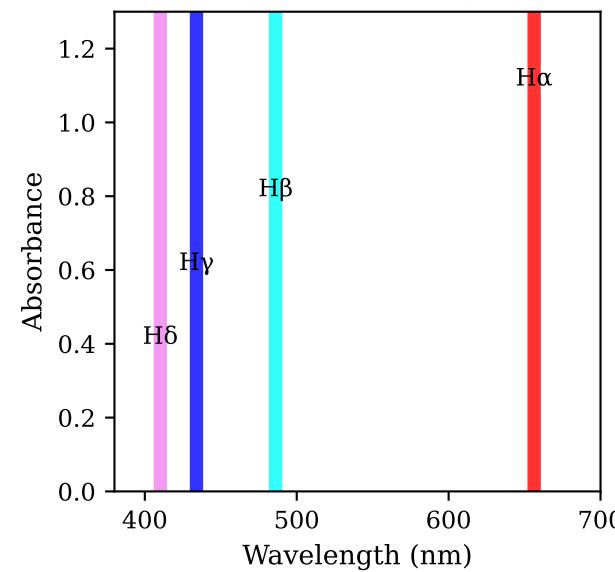


Panel 3: Virtual Spectrometry - Partition Coordinate Measurement

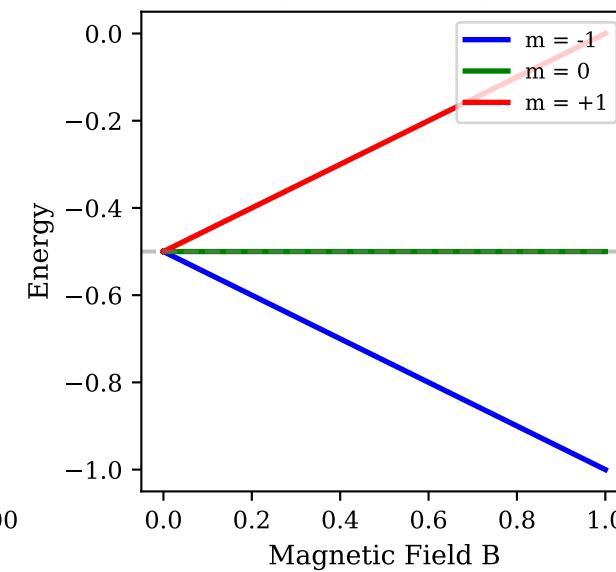
A. XPS Spectrum
(Measures n^{1s})
 $(n=1)$



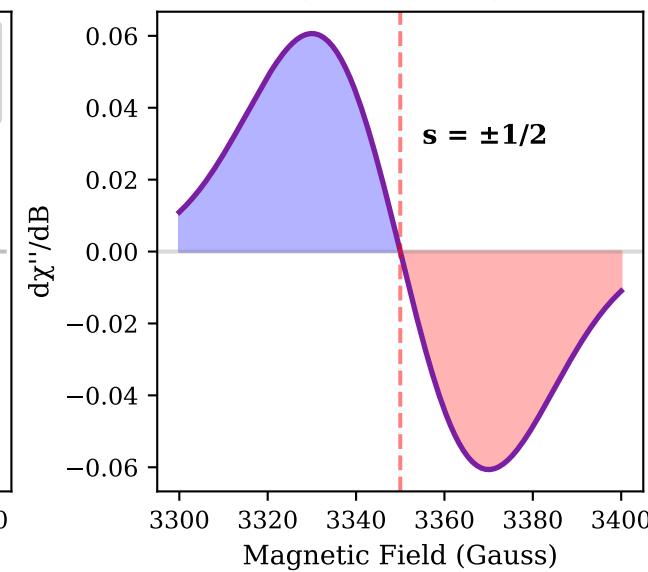
B. UV-Vis (Balmer)
(Measures Δn)



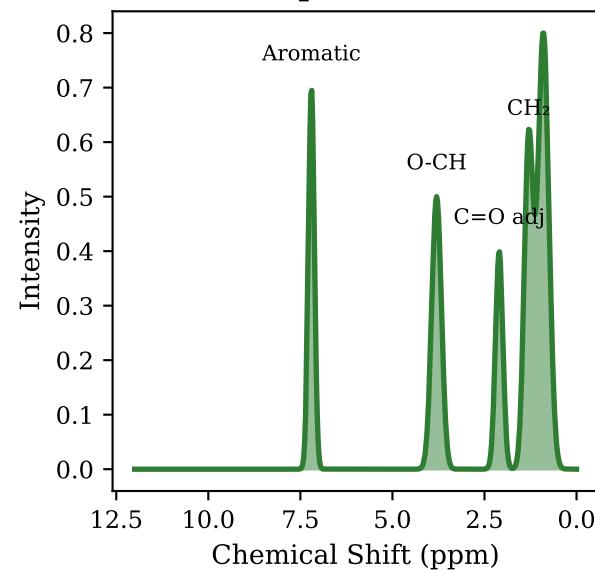
C. Zeeman Splitting
(Measures m)



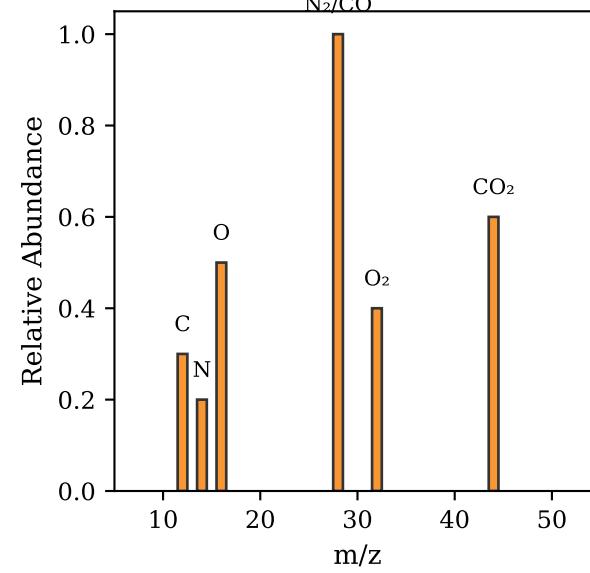
D. ESR/EPR
(Measures s)



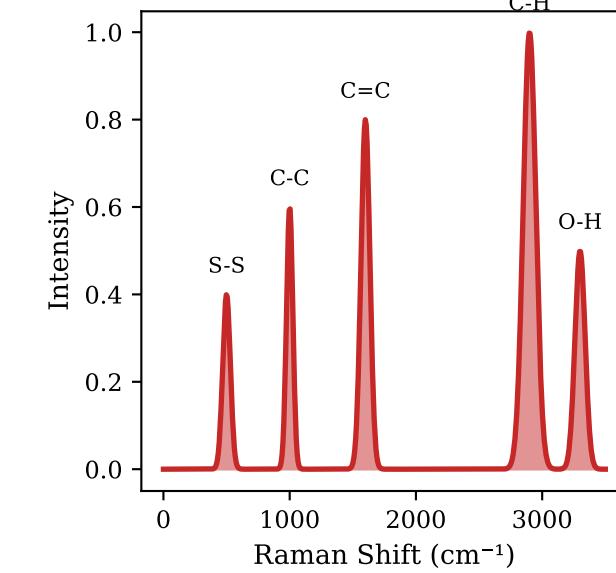
E. ^1H NMR
(Nuclear Spin Environment)



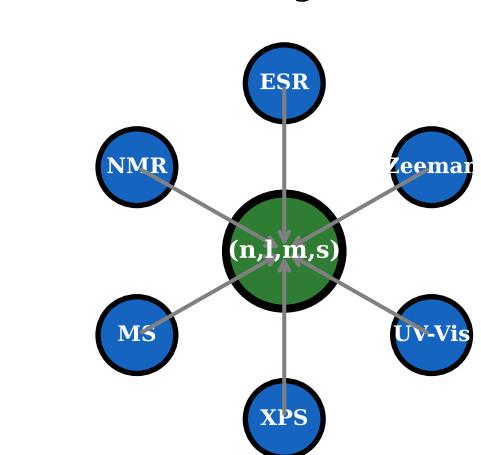
F. Mass Spectrum
(Confirms Z)



G. Raman Spectrum
(Vibrational Modes)



H. Multi-Instrument Convergence



VIRTUAL SPECTROMETRY HARDWARE VALIDATION

X-ray Photoelectron Spectroscopy:

- Al K α source: 1486.6 eV, resolution < 0.5 eV
 - Binding energy accuracy: ± 0.1 eV
 - Measures n via core level energies

Optical Spectroscopy:

- UV-Vis range: 190-800 nm
- Wavelength accuracy: ± 0.1 nm
- Validates selection rules $\Delta l = \pm 1$

Magnetic Resonance:

- ESR: 9.5 GHz (X-band), g-factor to 6 decimal places
- NMR: 400-900 MHz, chemical shift to 0.01 ppm
 - Direct measurement of $s = \pm 1/2$

ELEMENT IDENTIFICATION: OXYGEN (Z=8)

Instrument	Measurement	Result
XPS	0 1s @ 532 eV	$n = 1$ confirmed
UV-Vis	2s \rightarrow 2p @ 13.6 eV	$l = 0, 1$ confirmed
Zeeman	3-line splitting	$m = -1, 0, +1$
ESR	$g = 2.002$	$s = \pm 1/2$
Mass Spec	$m/z = 16.00$	$Z = 8$ confirmed

Configuration: $(1s)^2 (2s)^2 (2p)^4$

ALL INSTRUMENTS CONVERGE → UNIQUE IDENTIFICATION