

# Curiosity: A Spectrum Is Evidence, Not a Photograph

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Curiosity Reading | CheAI Research Inc.

**Packet ID:** g09\_u03\_w12

**Connection:** analytical technology

**Reading time:** 4 minutes

A mass spectrum is a graph of detected ions, arranged by mass-to-charge ratio. Peaks can support the idea that a sample contains isotopes, but a graph is interpreted evidence. Peak positions depend on charge and calibration; peak heights can be affected by how ions form and how a detector responds. Classroom stick spectra deliberately simplify those details so students can reason about patterns without operating instruments or handling samples.

## Think like a chemist

1. What does a 2+ charge mean about electron count?
2. Why is a tall peak not automatically an exact abundance?
3. Name one limitation of a stick spectrum.

| Word           | Meaning                                | Packet     |
|----------------|----------------------------------------|------------|
| cation         | positive ion                           | 2, 4, 6–11 |
| mass-to-charge | plotted ion relationship               | 13–15      |
| calibration    | checking graph scale against reference | 14–15, 20  |