



#### ACROSS

- 1 \_\_\_\_\_ precession refers to the precession of the magnetic moments of electrons, atomic nuclei, and atoms about an external magnetic field.
- 4 \_\_\_\_\_ spectrometry is an analytical technique used to measure the mass-to-charge ratio of ions.
- 6 In nuclear magnetic resonance (NMR), the chemical \_\_\_\_\_ describes the dependence of nuclear magnetic energy levels on the electronic environment in a molecule.
- 9 A \_\_\_\_\_ is an optical instrument used to measure properties of light over a specific portion of the electromagnetic spectrum, typically used in spectroscopic analysis to identify materials.
- 10 J-\_\_\_\_\_ describes the interaction between two nuclear spins due to the influence of bonding electrons on the magnetic field running between the two nuclei.
- 12 \_\_\_\_\_ magnetic resonance spectroscopy exploits the magnetic properties of certain nuclei. The most important applications for the organic chemist are proton NMR and carbon-13 NMR spectroscopy.

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- 2 A material's \_\_\_\_\_ spectrum shows the fraction of incident electromagnetic radiation absorbed by the material over a range of frequencies.
- 3 \_\_\_\_\_ is the study of the interaction between radiation and matter.
- 5 The \_\_\_\_\_ ratio of a particle or system is the ratio of its magnetic dipole moment to its angular momentum.
- 7 \_\_\_\_\_ spectroscopy is a form of absorption spectroscopy that develops information about the structure of molecular substances from various covalent bond vibrational modes.
- 8 A mass \_\_\_\_\_ is an intensity versus mass-to-charge ratio plot which represents the distribution of components by mass-to-charge ratio in a sample.
- 11 \_\_\_\_\_ NMR is the application of nuclear magnetic resonance in NMR spectroscopy with respect to hydrogen.