

Comparison b/w IR & Raman Spectra:-

Infra red spectra

- It is due to absorption of radiation by the vibrating molecules.

According to Selection

Rule:

- Dipole moment of the molecules changes.

- For IR, water cannot be used as a solvent.

- In IR, Dilute solution are used.

- Condition i.e: purity and impurity of the substance is not rigid.

Raman spectra

- It is due to scattering of radiation by the vibrating molecules.

- Polarizability of the molecules changes.

- For Raman, water can be used as a solvent.

- But in Raman, concentrated solution are used.

- In Raman, substance must be pure and colourless.

Day: _____

Date: _____

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| <ul style="list-style-type: none">• In IR spectroscopy, homonuclear diatomic molecules are in non active modes bcz there is no dipole moment. | <ul style="list-style-type: none">• In Raman spectroscopy homonuclear diatomic molecules are in active modes due to the polarizability. |
| <ul style="list-style-type: none">• In IR spectroscopy, Method is accurate and sensitive. | <ul style="list-style-type: none">• In Raman spectroscopy, Method is less accurate and less sensitive. |
| <ul style="list-style-type: none">• In IR, optical system is made up of special crystal like NaBr, CaF_2 etc. | <ul style="list-style-type: none">• In Raman, optical system is made up of Glass or quartz. |
| <ul style="list-style-type: none">• No need for specific sample Preparation. | <ul style="list-style-type: none">• Need for specific sample Preparation. |
| <ul style="list-style-type: none">• Provide information of the covalent characteristics of the molecules. | <ul style="list-style-type: none">• Provide information of the ionic characteristics of molecules. |