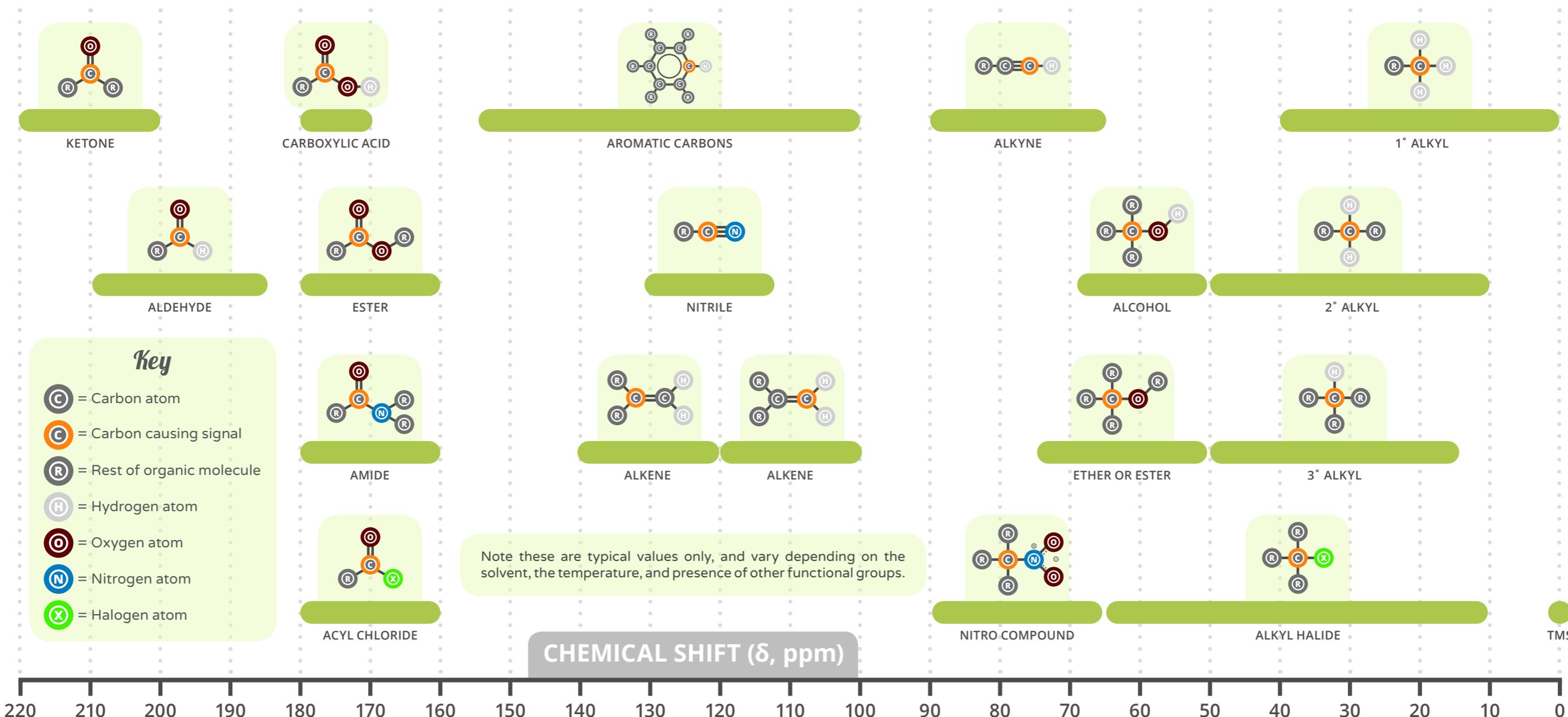


A GUIDE TO ^{13}C NMR CHEMICAL SHIFT VALUES

Nuclear Magnetic Resonance (NMR) is a commonly used technique for organic compound structure determination. In ^{13}C NMR, applying an external magnetic field causes the nuclei spin to flip. The environment of the carbon atom in the molecule affects where the signal is seen on the resultant spectrum.



12C 99%

13C 1%

Only 1% of carbon atoms are carbon-13, atoms which have one more neutron than carbon-12. NMR doesn't work for carbon-12, as its nucleus doesn't have a 'spin'. The frequency required to 'flip' a carbon-13 nucleus is around a quarter of that required to flip an hydrogen nucleus in H-NMR. As the probability of two adjacent carbons in a single molecule being carbon-13 atoms is very low, no splitting of peaks is seen, unlike in H-NMR.



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