

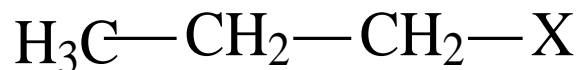
1. Efeito macroscópico (Hibridização)

- 0,5 a 5 ppm \rightarrow Hidrogênios ligados a carbono sp^3
- 2 a 3,5 ppm \rightarrow Hidrogênios ligados a carbono sp
- 4,5 a 7,0 ppm \rightarrow Hidrogênios ligados a carbono sp^2
- 6,5 a 9 ppm \rightarrow Hidrogênios em anéis aromáticos
- 9 a 10 ppm \rightarrow Hidrogênios aldeídicos

EFEITOS QUE ATUAM SOBRE O DESLOCAMENTO QUÍMICO (δ)

1. Efeitos microscópicos:

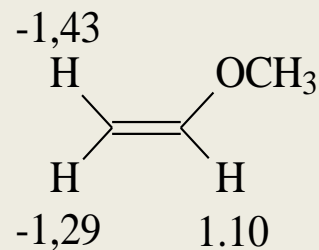
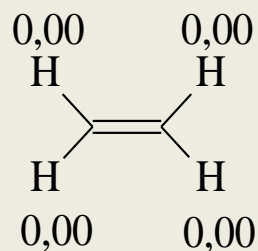
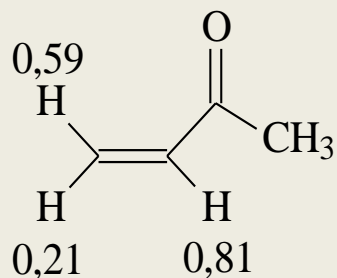
1.1. Efeito Indutivo (Eletronegatividade)



0,91	1,33	0,91	X = H
1,06	1,81	3,47	X = Cl
1,06	1,89	3,35	X = Br
1,03	1,88	3,16	X = I
0,93	1,53	3,49	X = OH
0,93	1,43	2,61	X = NH ₂

EFEITOS QUE ATUAM SOBRE O DESLOCAMENTO QUÍMICO (δ)

1.1. Efeito Mesomérico (Ressonância)

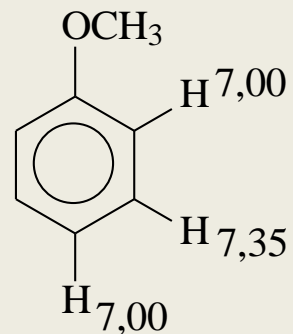
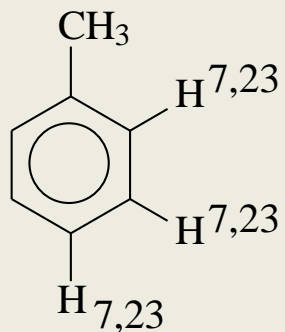
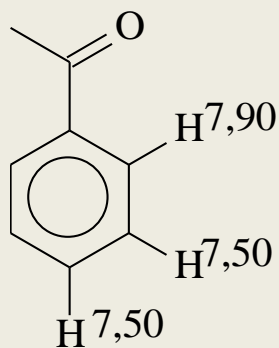


Valores de $\Delta\delta$

$$\Delta\delta = \delta_{\text{Composto}} - \delta_{\text{Padrão}}$$

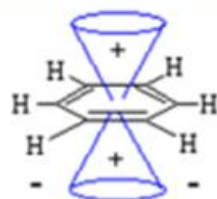
EFEITOS QUE ATUAM SOBRE O DESLOCAMENTO QUÍMICO (δ)

Efeito Mesomérico (Ressonância), Continuação

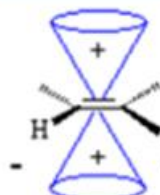


EFEITO DA ANISOTROPIA MAGNÉTICA

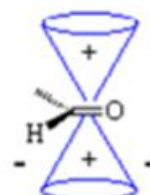
Anisotropia em alguns sistemas de ligação múltipla comuns



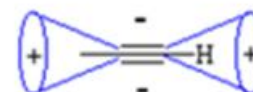
$\delta = 7-8$ ppm



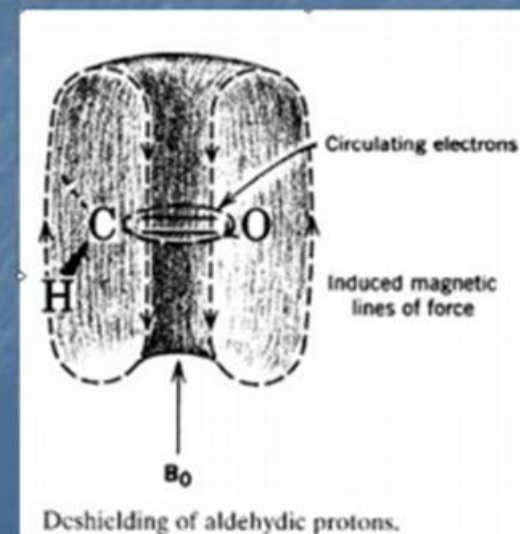
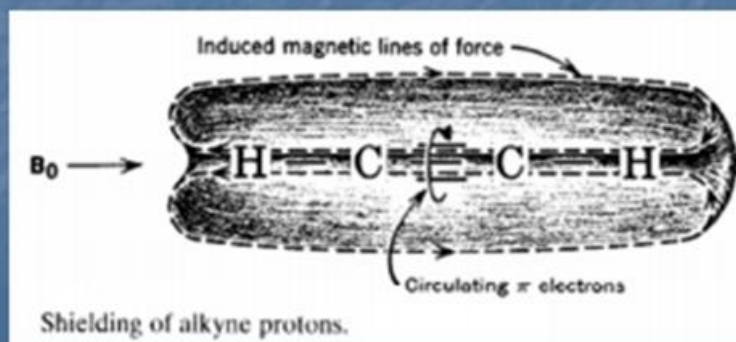
$\delta = 5-7$ ppm



$\delta = 9-10$ ppm



$\delta = 2-3$ ppm



EFEITO DA ANISOTROPIA MAGNÉTICA

Fatores que afetam o deslocamento químico

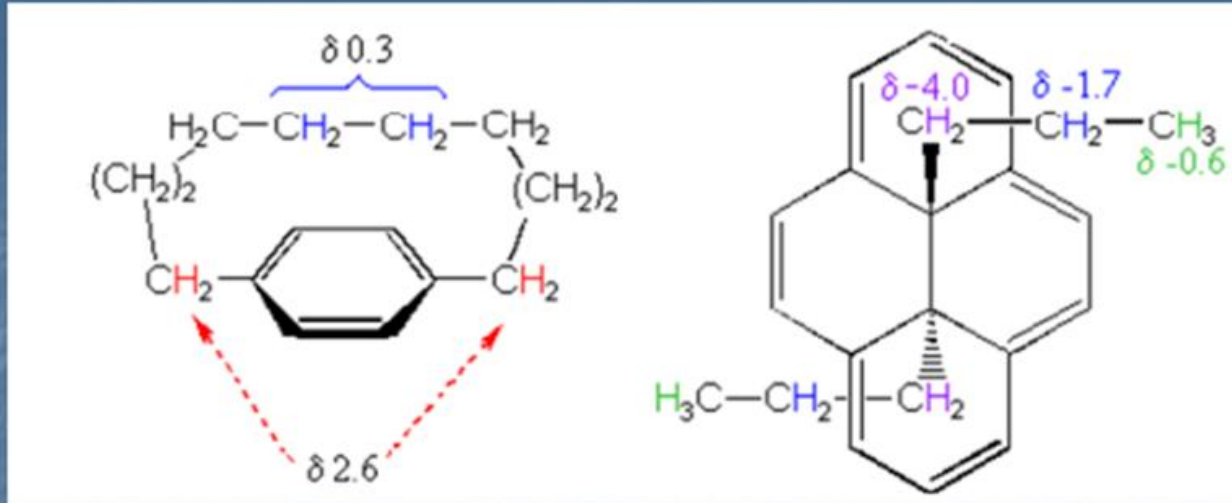
Magnética

Induzido
Magnetic Field

Anisotropia magnética

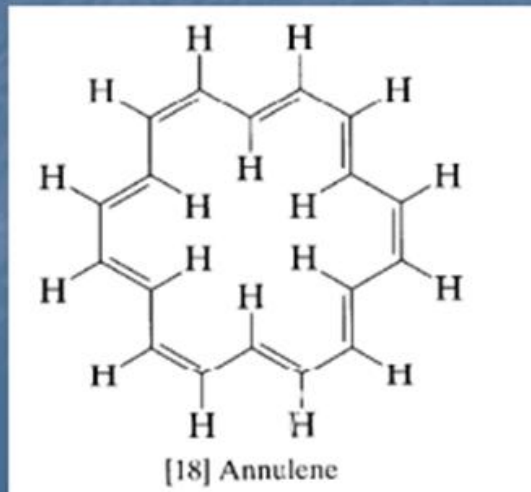
The diagram illustrates the effect of magnetic anisotropy on chemical shift. It shows a central nucleus (red) with surrounding electron shells (blue) and a vertical arrow labeled B_0 representing the external magnetic field. The diagram is part of a presentation slide with a dark blue background and white text.

EFEITO DA ANISOTROPIA MAGNÉTICA



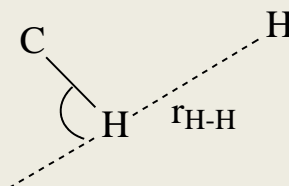
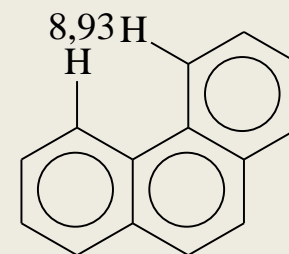
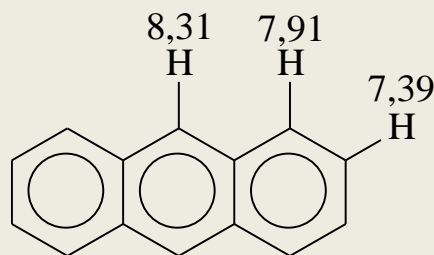
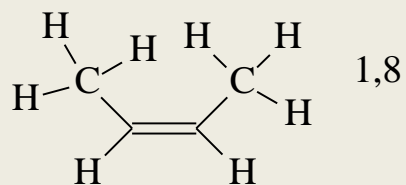
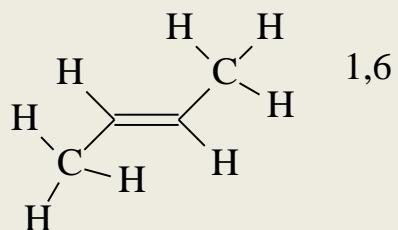
$\delta = 9.3$ ppm (Hs externos)

$\delta = -3.0$ ppm (Hs internos)



EFEITO DE COPRESSÃO ESTÉRICA

1.1. Efeito de Compressão Estérica



EFEITO DO CAMPO ELÉTRICO

2.5. Efeito do Campo Elétrico

