MICRONS

% TRANSMITTANCE

WAVENUMBERS (CM⁻¹)

$C_{10}H_{14}$

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ν(C–H) sp² ar

ν(C–H) sp³

aromatic overtones para substitution

ν(C=C) ar

δ(CH₃) i-propyl

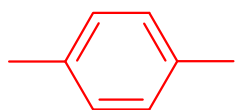δ(C–H)$_{oop}$ ar para subst.

$U = 10 + 1 - \frac{1}{2}(14 - 0) = 11 - 7 = 4 \Rightarrow$ maybe aromatic $\Rightarrow$ confirmed by ν(C–H) sp² and ν(C=C)$_{ar}$? yes

$\Rightarrow$ overtones between 2000 and 1670 cm⁻¹? yes, para substitution $\Rightarrow$ confirmed by δ(C–H)$_{oop}$? yes

C_6H_4 fragment, left are C_4H_{10}

either C_1 (methyl) plus C_3 (propyl or isopropyl) or twice C_2 (ethyl) $\Rightarrow$ δ(CH₃) isopropyl!

solution: