*CHEM 242 – Lecture 20 03/03/2014*

Overheads: - Outline Handout: Aromatics

- Bruice MS & IR overheads

Recap Friday: Reactions of Substituents on Aromatics - See Handout

Synthesis Examples:







Determining Structure of Organic Molecules: -how do we know what we have?

Main tool is Spectroscopy / Spectrometry

Interaction of matter with light

Interaction of matter with energy (more general)

Three main types:

Mass Spectrometry (MS): Gives molecular weight - uses electrons as energy source

Infrared Spectroscopy (IR): Gives functional group info – uses infrared radiation (heat!)

Nuclear Magnetic Resonance Spectroscopy (NMR): Gives most structural info – uses radio waves

Also UV/Vis: Gives info about conjugated double bonds – uses ultraviolet/visible light

Mass Spectrometry (MS):



\*\*\* Only see cations in mass spec – neutral molecules “pumped off”

Figure 14.1/13.1: Schematic of how Mass Spectrometer works



Highest mass peak = 72 molecular ion = whole molecule but charged (M+)

Other Peaks: lower mass = fragmentation peaks

M+ extremely high energy, breaks into smaller bits

Tallest Peak = Base Peak

= most stable cation (can be M+ or fragment)

= set to 100%, everything else is relative to it

