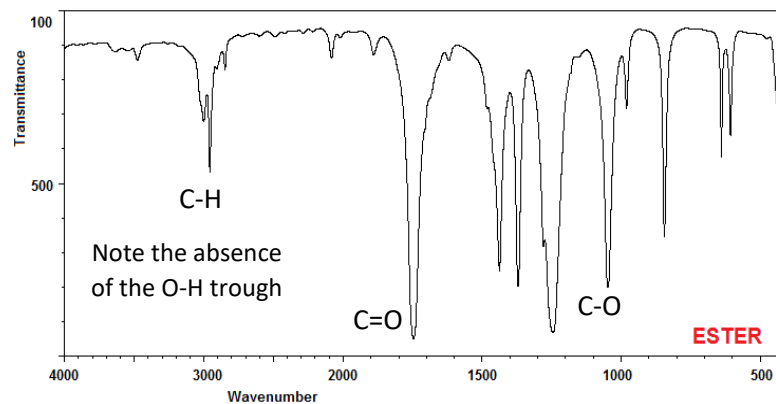
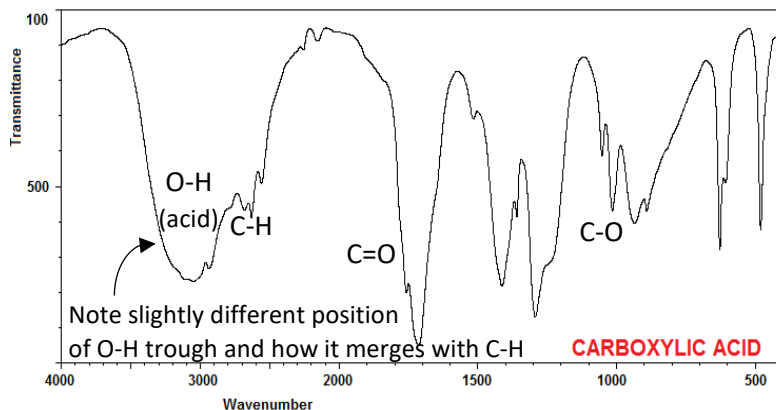
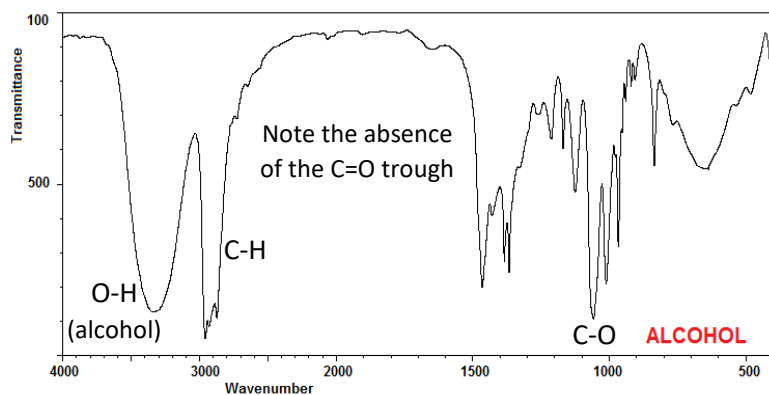


# IMPORTANT INFRARED TROUGHS

You must clearly distinguish between O-H (acid) and O-H (alcohol)



## Infrared absorption data

Characteristic range for infrared absorption

	Bond	Wave number (cm <sup>-1</sup> )		
Fingerprint Region	C-Cl	700-800	Wavenumber Increases	
	C-C	750-1100		
Functional Group Region 1000 - 4000 cm <sup>-1</sup>	C-O	1000-1300	Wavelength Decreases	
	C=C	1610-1680		
	C=O	1670-1750		
	O-H (acids)	2500-3300		Frequency Increases
	C-H	2850-3300		
	O-H (alcohols)	3200-3550		Energy absorbed Increases
N-H (primary amines)	3350-3500			

Troughs generally have a characteristic shape.  
eg. The hydroxyl trough is usually large and broad.

$C-C \rightarrow C=C \rightarrow C \equiv C$  As bond strength  $\uparrow$ , wavenumber  $\uparrow$

$C-H \rightarrow C-C \rightarrow C-Cl$  As mass  $\uparrow$ , wavenumber  $\downarrow$

