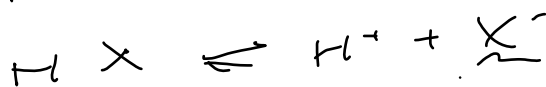


Ch. 16.10 acid strength & chemical structure

acid: $H - X$
 X nonmetal

acid strength depends on

- Polarity of the $H-X$ bond
 \uparrow bond polarity $\rightarrow \uparrow$ ionic bond character
 \downarrow acid strength
- bond strength of the $H-X$ bond
 \uparrow bond strength $\rightarrow \downarrow$ acid strength
- "stability" of X^-
 "more stable" $\rightarrow \uparrow$ acid strength



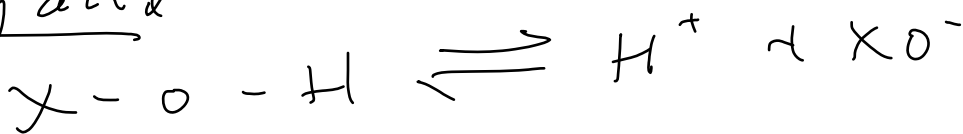
Column vs row in the periodic table

row: $L \rightarrow R$ ex $NH_3 \rightarrow H_2O \rightarrow HF$
 $\uparrow EN \rightarrow \uparrow \Delta EN \rightarrow \uparrow$ bond polarity = \uparrow ionic bond character
 \uparrow acid strength \leftarrow

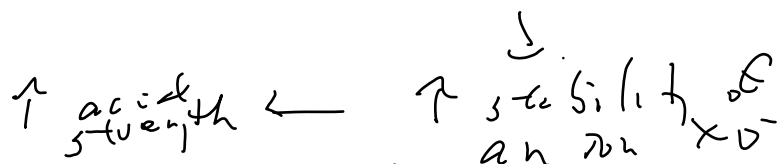
<u>column</u>	<u>(T \rightarrow B)</u>	ex	<u>bond strength</u>	<u>acid strength</u>
		HF	high	low
		HCl	}	}
		HBr		
		HI	low	high

$\downarrow EN \rightarrow \downarrow \Delta EN \rightarrow \downarrow$ bond strength $\rightarrow \uparrow$ acid strength

oxy acid



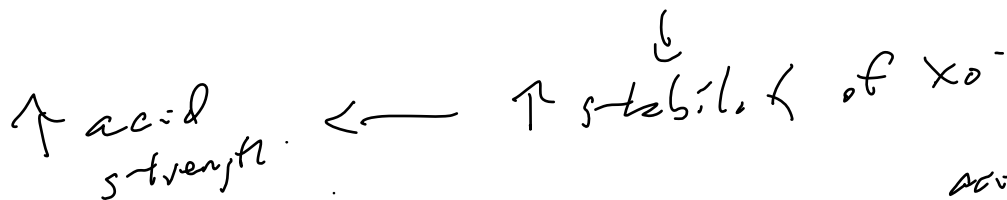
• ↑ EN of X → XO⁻ → XO⁻ "more" willing to accommodate the negative charge



ex

H-O-Cl	high	high
H-O-Br	↓	↓
H-O-I	low	low

• ↑ # oxygen to X → more "willing" to accommodate the negative charge



ex

H-O-Cl	low	low	low
H-O-Cl-O	↓	↓	↓
H-O-Cl-O-O	↓	↓	↓
H-O-C(=O)-O	high	high	high