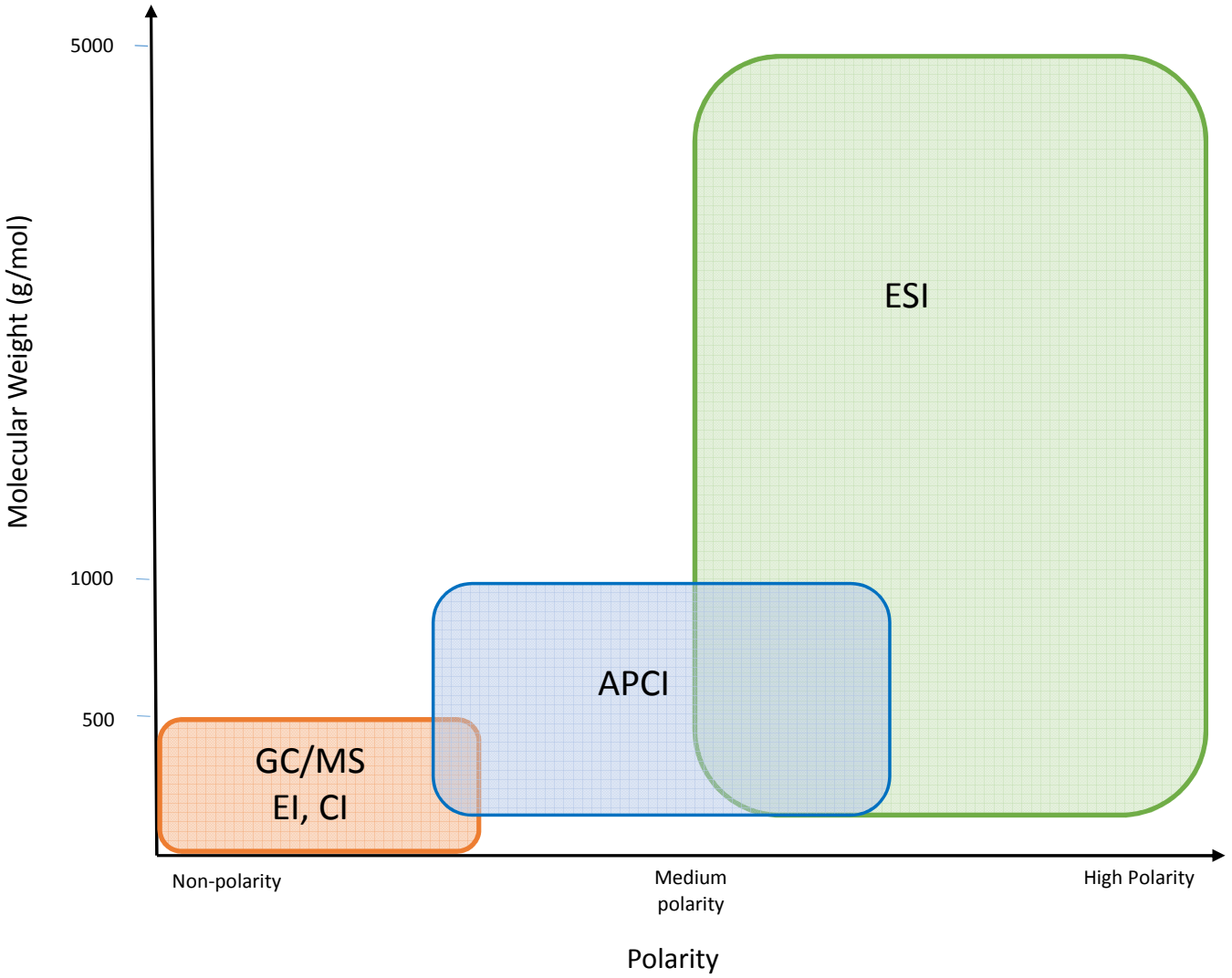
Ionization methods and applicable compounds



Which analyse for your sample ?

Sample type	Molecular weight (g/mol)	Introduction mode	Ionization mode	Quantity	Expected results	Resolution	Precautions
Thermally stable Non-polar (hydrocarbures, esters, …)	**MW** < 500	GC : Gas Chromatography *Provide chromatogramme*	**EI**: Electron impact ionization	5 mg	-Fragmentation -Molecular pic possible $M^{+\cdot}$	Low	**- No H_2O** **- No molecules > 500 g/mol** **- No complexes** **- Samples will be filtred if in solution**
			CI : Chimical ionization (NH_3)		-Few fragmentation -Pseudo-molecular pic : MH^+ and/or MNH_4^+		
Non-polar (sugars, amines, …)	150 < **MW** < 5000	Direct introduction LC : Liquid Chromatography	**ESI** : Electrospray ionization -$T°_{source}$: 180 °C -Analyses : **+** (amines) and **-** (acids, alcohol)	1 mg	-No (or few) fragmentation - Ion mono- and multicharged products : In **+** : MH^+ and/or MNa^+ (MK^+), $(M+2H)^{2+}$, $(M+2Na)^{2+}$… In **-** : MH^-	High	**- No non-volatil solvent (DMSO type)** **- No tampon** **- No salt** **- Samples will be filtred if in solution**
Moderately polar	150 < **MW** < 1000	Direct introduction LC : Liquid Chromatography	**APCI** : Atmospheric Pressure Chimical Ionization -$T°_{source}$: 400 °C -Analyses : **+** and **-**	1 mg	-No (or few) fragmentation -Ion monocharged products : MH^+ or MH^-	High	**- No non-volatil solvent (DMSO type)** **- No tampon** **- No salt** **- Samples will be filtred if in solution**

Operating procedure: ESI

- ✓ Provide 1 mg of sample in 2 mL vial and write the name on
- ✓ The sample is dissolved into the solvent you indicate (C = 1 mg/mL). Don't use non-voltil solvent (DMSO…)
- ✓ 100 µL of this solution are diluted in 1 mL of MeOH (C = 100 µg/mL)
- ✓ Injection of 5 µL driven by a mix of H_2O:MeOH (50:50)

Operating procedure : CI/EI

- ✓ Provide 5 mg of sample in 2 mL vial and write the name on
- ✓ The sample is dissolved into the solvent you indicate (C = 5 mg/mL). Don' use H_2O and non-volatil solvent

  - ➢ GC : Give us a chromatogramme. Injection of 1 µL in GC