BGD Group – 2011 TLC Developing System

The following solvent systems are roughly ordered from least polar to most polar. For multi-solvent systems, the polarity will dependent on the solvent ratio

**Good (more usual) systems that are most often used that run quickly and vac-off cleanly/well - efficient*

Pentane	
Hexane or Petrol	
Petrol/Ether	
THF/Petrol	
THF/Ether	
THF/EtOAc	
THF/MeOH	
*Petrol/EtOAc	
Acetone/Toluene	a change in solvent type can pull apart two spots that might have the same Rf in a different solvent system with the same polarity – solvent:solute interactions are molecular too so change the solvent structure if you need to
Acetone/Petrol	
EtOAc	
Toluene/EtOAc	(good for aromatic compounds)
Et_3N/EtOAc	(up to 5% Et_3N, use for basic compounds or those that are acid sensitive and so decompose on silica - Et_3N may be hard to vac-off so use 0.1% is you can)
DCM	
Petrol/DCM	
Acetone/DCM	
Et_2O/DCM	(good for halogenated protected sugars, e.g 1:50)
*EtOAc/(Hexane/Petrol)	
EtOAc/DCM	
EtOH/DCM	
EtOH/$CHCl_3$	(good for free hydroxyl group)
Ether/MeOH	
$CHCl_3$/Acetone	(good for separation of protected anomeric mixture, e.g. 97:3)
*MeOH/EtOAc	(good for protected sugars, up to 20% MeOH, + 1-2% AcOH in presence of acid impurity) Remember >20% MeOH in EtOAc will start to dissolve some silicas giving you a fine white powder/crystals on vac-down and a yield of >100%!
AcOH/EtOAc	(use for acidic compounds, 1-5% AcOH)
MeOH/DCM	(up to 20% MeOH)
*MeOH/$CHCl_3$	
*i*PrOH/EtOAc	
*i*PrOH/$CHCl_3$	
BuOH/AcOH/H_2O	BuOH can be quite unique for some compounds
NH_4OH/MeOH/DCM	(for basic compounds, 1-10% NH_4OH, 25% aq.)
*$CHCl_3$/MeOH/Acetone/H_2O	
*$CHCl_3$/MeOH/AcOH/H_2O	CMAW or “Seymour”
H_2O/THF/Ether	
H_2O/MeCN	
H_2O/*i*PrOH/Ether	
H_2O/*i*PrOH/EtOAc + 100mM NaCl	
H_2O/*i*PrOH/EtOAc	(for very polar compounds; up to 1:2:2)
EtOH/NH_4(aq.)/H2O	
H_2O/iPrOH/EtOAc + 1% NH4 (aq.)	
H_2O/$CHCl_3$/MeOH/AcOH	
H_2O/AcOH/MeOH/EtOAc	
NH_4OH/MeOH/*i*PrOH	(for very polar, basic compounds like deprotected amino acids; up to 10% NH_4OH and 20% MeOH)