Bar Graph showing concentrations of species in solution

(water is not included in these graphs as it has a very high concentration of 55.5 molL-1)

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| The **salts** below dissolve fully in water,there are many ions free to move and carry a charge, so these aqueous solutions are good electrolytespH = 7 as [H3O+] = [OH-] |
| NaClH3O+Cl-Na+OH-NaCl (s) 🡪 Na+ (aq) + Cl- (aq)there is no such thing as NaCl (aq) | CaCl2OH-H3O+Ca2+Cl-CaCl2(s) 🡪 Ca2+(aq) + 2Cl-(aq)notice that conc of Cl- ions is twice OH-Cl-conc Ca2+ ions | CaSO4Ca2+SO42-OH-H3O+CaSO4(s) 🡪 Ca2+ (aq) + SO42-(aq)Na+CaSO4 is only slightly soluble so all concentrations are lower |

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| The following solutions all have [OH-] > [H3O+] so the pH > 7They are also good electrolytes as there are ions free to move in solution and carry a charge |
| CH3COONa in waterCH3COO-H3O+OH-Na+CH3COOHCH3COONa(s) 🡪 Na+(aq) + CH3COO-(aq)CH3COO-(aq) + H2O ⇌ CH3COOH(aq) + OH-(aq) | NaOH in waterstrong baseH3O+Na+OH-NaOH(s) 🡪 Na+(aq) + OH-(aq) | Ca(OH)2 in waterstrong baseOH-Ca2+H3O+Ca(OH)2(s) 🡪 Ca2+(aq) + 2OH-(aq) |
| NH3 in waterweak baseOH-NH3NH4+H3O+NH3(aq) + H2O ⇌ NH4+(aq) + OH-(aq) |  |  |

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| The following solutions all have [H3O+] > [OH-] so the pH < 7They are good electrolytes as there are ions free to move in solution and carry a charge |
| HCl in watera strong acidOH-Cl-H3O+HCl(aq)+ H2O 🡪 H3O+(aq) + Cl- (aq) | CH3COOH in watera weak acidCH3COO-H3O+OH-CH3COOHCH3COOH(aq) + H2O ⇌ CHCOO-(aq) + H3O+(aq) | NH4Cl in watera saltCl-NH4+H3O+NH3OH-NH4Cl(s) 🡪 NH4+(aq) + Cl- (aq)NH4+ (aq) + H2O ⇌ NH3(aq) + H3O+(aq)Ca2+ |

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| very soluble in water but a poor conductor of electricity as there are few free ions to carry a chargeneutral pH |  | insolublepoor conductor of electricityneutral pH |
| CH3CH2OHCH3CH2OHH3O+OH-CH3CH2OH(l) 🡪 CH3CH2OH(aq) |  | C6H12OH-H3O+as cyclohexane is insoluble, the concentrations of species present in water is unchanged |

Reference: edited from <http://moodle.lynfield.school.nz/mod/resource/view.php?id=11521>

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