

# Flocculating Cations

- We can divide cations into two categories
  - Poor flocculators
    - Sodium
  - Good flocculators
    - Calcium
    - Magnesium

Ion		Relative Flocculating Power
Sodium	Na <sup>+</sup>	1.0
Potassium	K <sup>+</sup>	1.7
Magnesium	Mg <sup>2+</sup>	27.0
Calcium	Ca <sup>2+</sup>	43.0

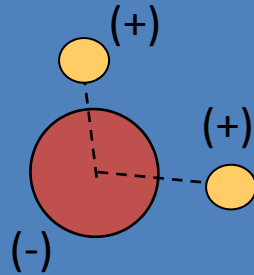


Sumner and Naidu, 1998

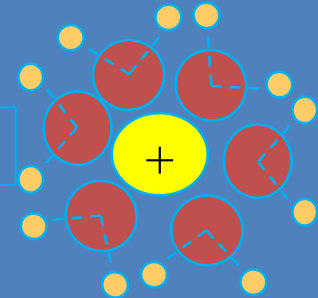
# Flocculating Power of Cations

Cations in water attract water molecules because of their + charge, and become hydrated.

Water molecule is polar:  
(+) on one end, (-) on the other end



Hydrated cation



Cations with a single charge and large hydrated radii are the poorest flocculators.

Cation	Charges per molecule	Hydrated radius (nm)	Relative flocculating power
Sodium	1	0.79	1.0
Potassium	1	0.53	1.7
Magnesium	2	1.08	27.0
Calcium	2	0.96	43.0

