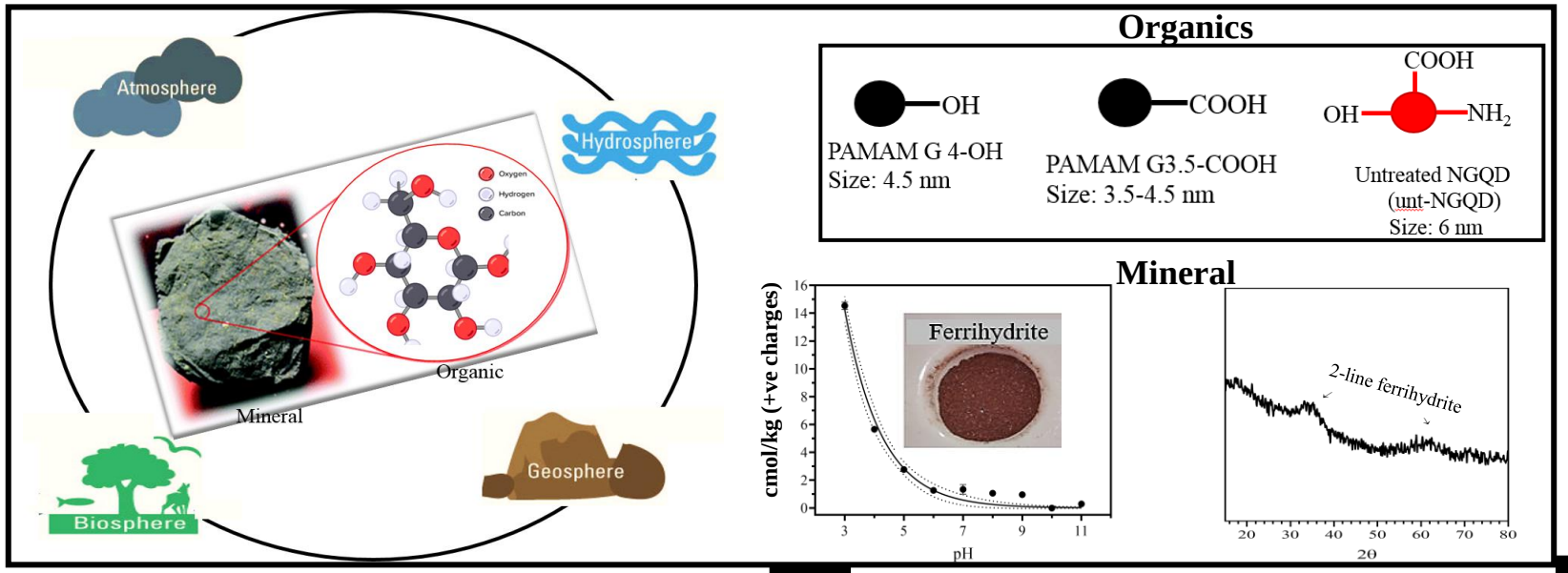


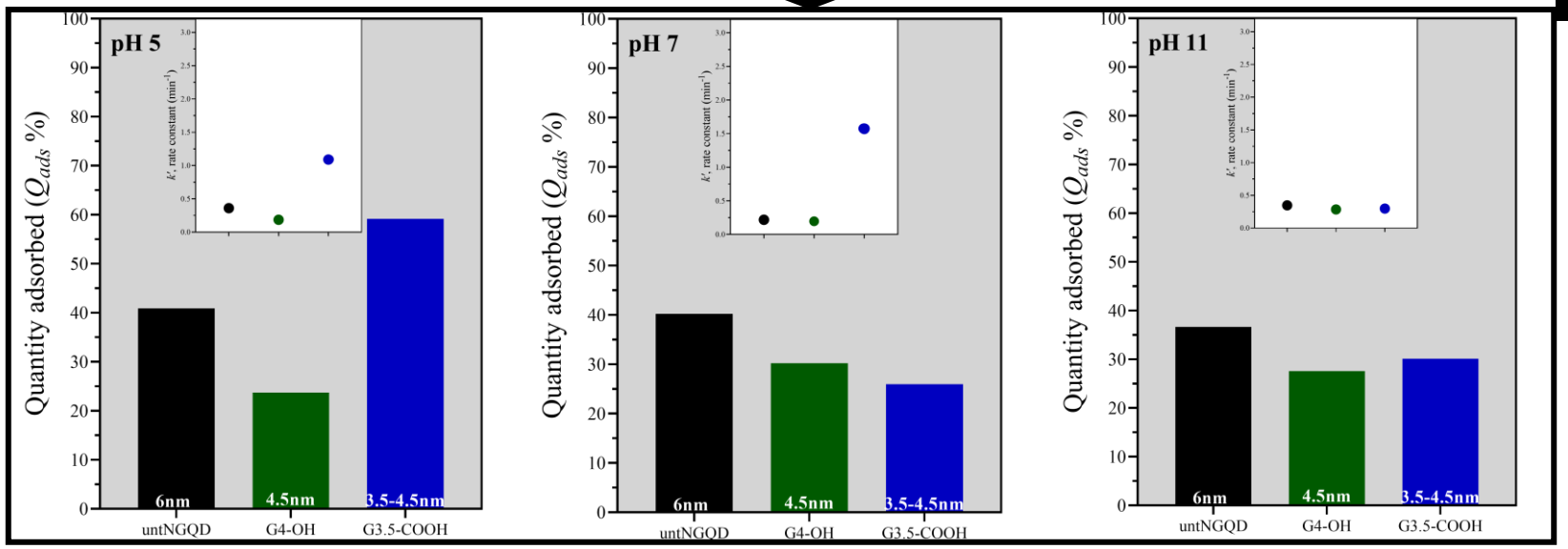
Organics

PAMAM G 4-OH
Size: 4.5 nm

PAMAM G3.5-COOH
Size: 3.5-4.5 nm

Untreated NGQD
(unt-NGQD)
Size: 6 nm

Mineral



➢ Findings:

pH 5: +ve charges on ferrihydrite

- $Fh^+ + G3.5\text{-}COO^- \rightarrow$ Fh-G3.5-COO
  - ➢ electrostatic bonding is dominant
- G4-OH & unt-NGQD do not deprotonate
  - ➢ non-charge bonding

pH 7→ pH 11: gradually less +ve charges

- less +ve sites for $G3.5\text{-}COO^-$ to bind to
- slower reactions = non-charge bonding

G3.5-COOH behavior: pH dependent

G4-OH & untGQDs behavior: no evidence of pH dependence

➢ Applications:

- Organics behavior in earth's systems
  - Mechanism and kinetics
- Model for other studies involving organics and minerals
- Long term applications: environmental remediation, curbing climate change

ORGANIC NANOMATERIALS-FERRIHYDRITE INTERACTIONS

Aurore Manzi
Faculty Advisor: Omar R. Harvey
Department of Geological Sciences, Texas Christian University