

EPR characterization of oxovanadium coordination complexes

Grantee name: Matteo Marafante - PhD Project: Thermodynamic study of first-row transition metal ions complexes of biomedical interest

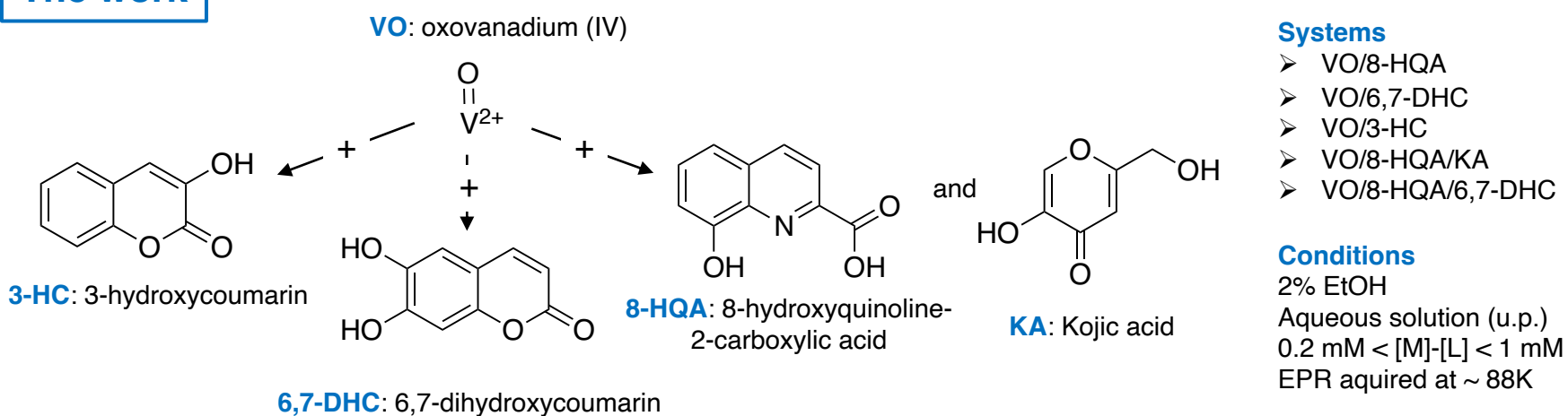
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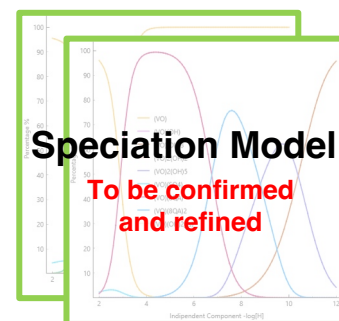
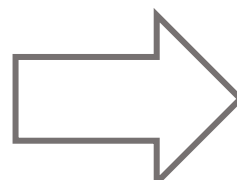
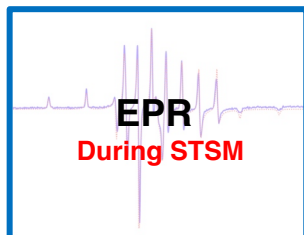
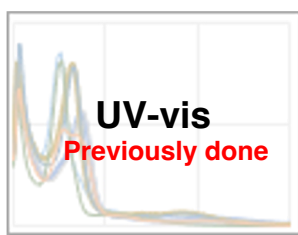
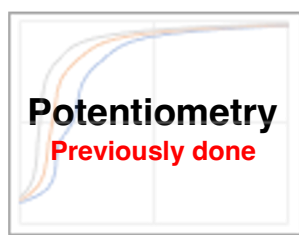
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The work

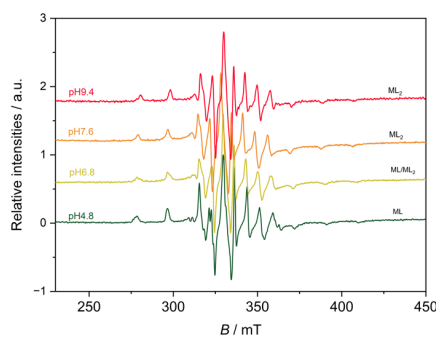
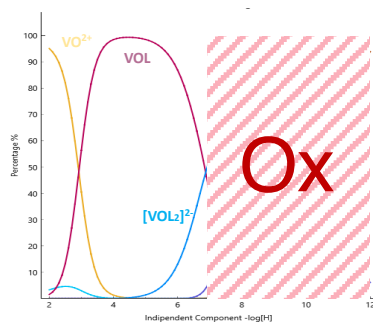


The approach



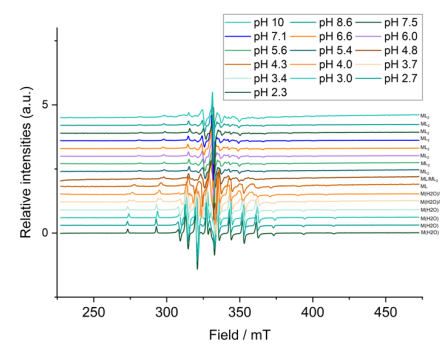
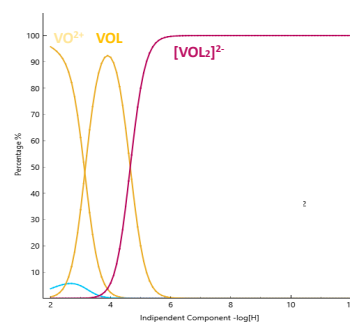
VO/8-HQA

- ✓ 2 metal complexes → ML and ML₂
- ⚠ VO signal lost due to oxidation above pH ~ 7
- ✓ Free-O₂ experiments show the ML₂ presence up to pH 9.4
- 🔍 Refinement of the constants with further free-O₂ pH experiments



VO/6,7-DHC

- ✓ 2 metal complexes → ML and ML₂
- ⚠ VO signal decrease at alkaline pH (oxidation)
- ✓ Free-O₂ Uv-vis experiments confirm oxidation
- ✓ Speciation model and EPR agree



Other systems

- VO/3-HC** → No proof of coordination using any techniques (potentiometry, UV-vis spectroscopy and EPR)
- VO/8-HQA/KA** → A mixed complex is formed around neutrality (stoichiometry 1:1:1)
- VO/8-HQA/6,7-DHC** → 6,7-DHC coordination prevails on the 8-HQA coordination: VO/6,7-DHC ML is formed in solution