

Mechanistic Insights into Phenol Adsorption and Mass Transport on Multi-Walled Carbon Nanotubes

Thiago Ferro de Oliveira ^{1, 2, 3} Simoni Margareti Plentz Meneghetti ^{2, 3}

¹ Institute of Mathematics, Federal University of Alagoas, Maceió 57072-970, AL, Brazil

² Postgraduate Program in Chemical Engineering, Federal University of Alagoas, Maceió 57072-970, AL, Brazil

³ Catalysis and Chemical Reactivity Group (GCAR), Chemistry Department, Federal University of Alagoas, Maceió 57072-970, AL, Brazil

thiago.oliveira@im.ufal.br

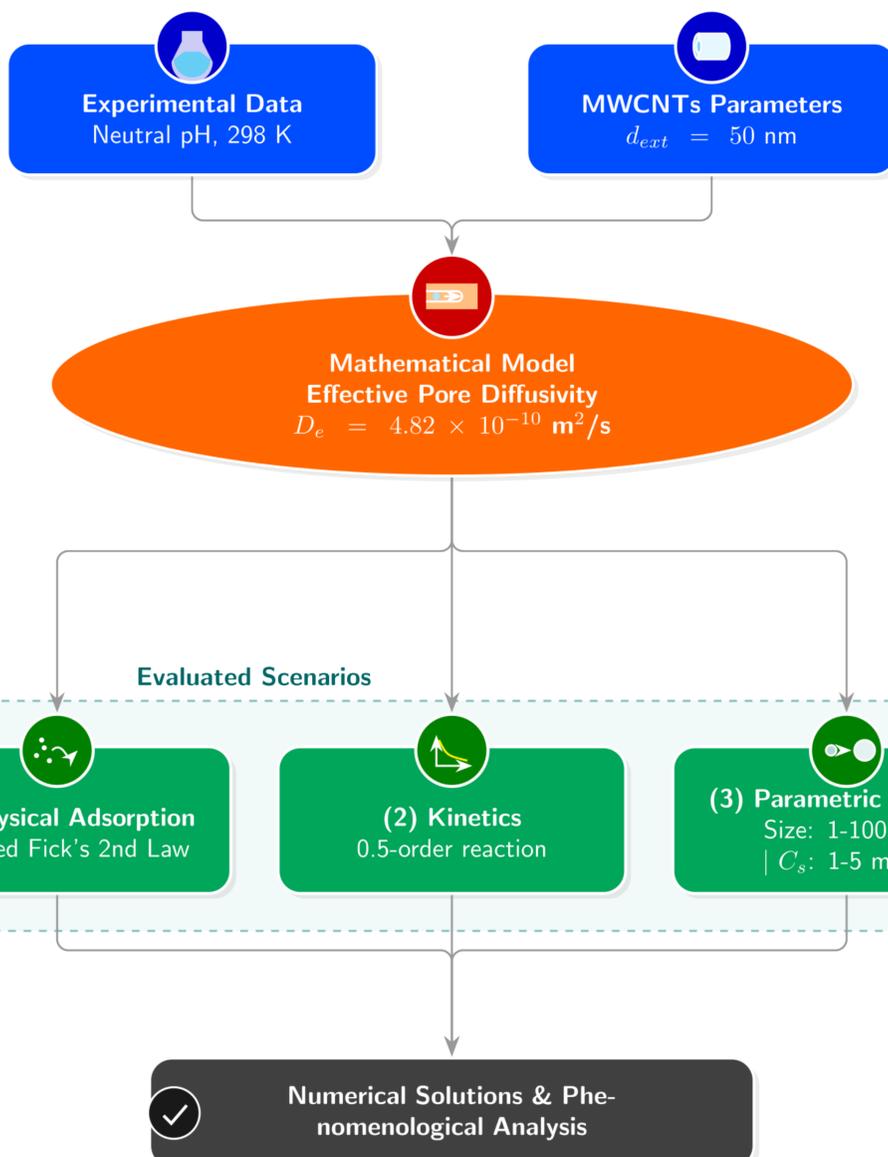
INTRODUCTION & AIM

Phenol remediation from contaminated effluents presents a critical industrial challenge due to its acute toxicity even at trace concentrations [1-3].

Multi-walled carbon nanotubes (MWCNTs) are promising adsorbents for this purpose, given their high adsorption capacity and ease of separation [4].

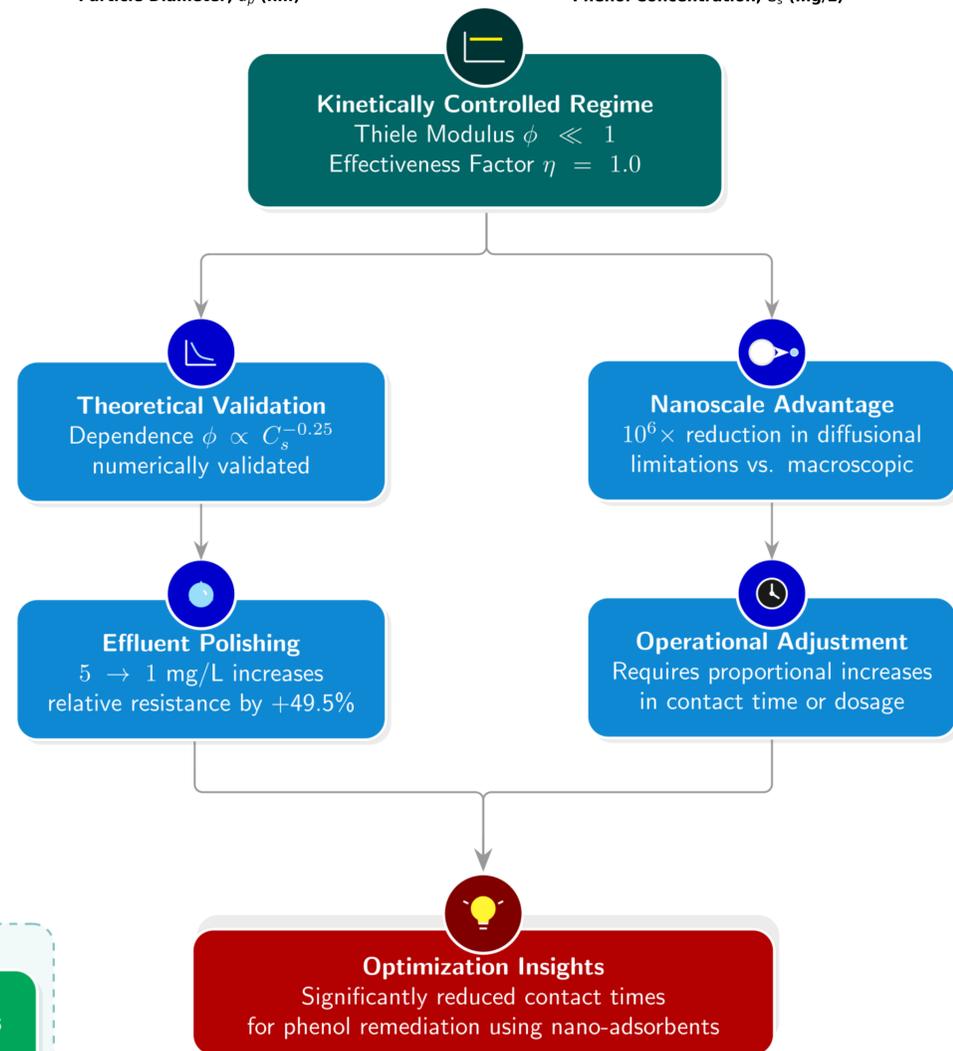
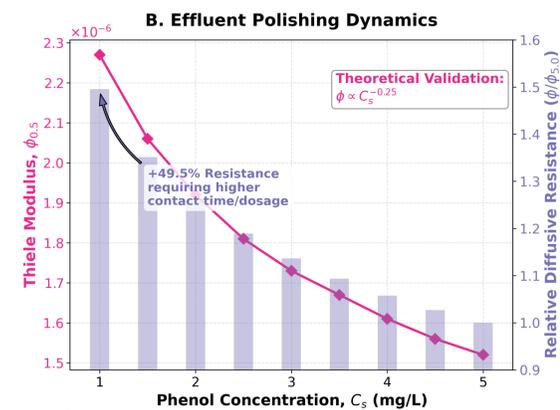
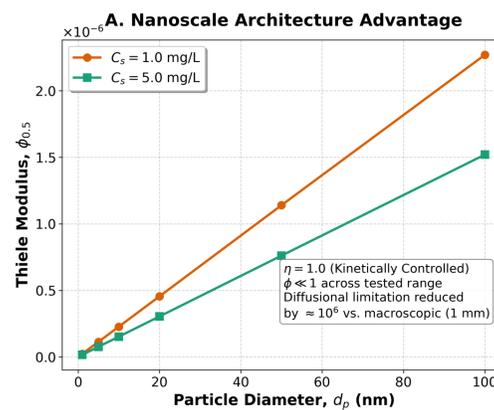
Aim: Presents a phenomenological and numerical analysis of mass transport coupled to phenol adsorption on MWCNTs ($d_{ext} = 50$ nm) parameterized with published experimental equilibrium data under neutral pH conditions at 298 K [1, 4, 5].

METHOD



RESULTS & DISCUSSION

Mechanistic Insights: Mass Transport & Adsorption Kinetics on MWCNTs



CONCLUSION

This phenomenological analysis provides fundamental mass transport insights for optimizing phenol remediation systems using nano-adsorbents.

REFERENCES

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- [4] <https://doi.org/10.1016/j.jare.2014.06.001>
- [5] <https://doi.org/10.1021/jp1107075>