TITLE

The effects of nondimentionalization in Physics-Informed Neural Networks applied to the Kinetics of Biological Reactions: A case study with *Lactobacillus casei*

AUTHOR LIST

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19 **1 FIGURES**

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Figure 1: Schematic of the PINN model

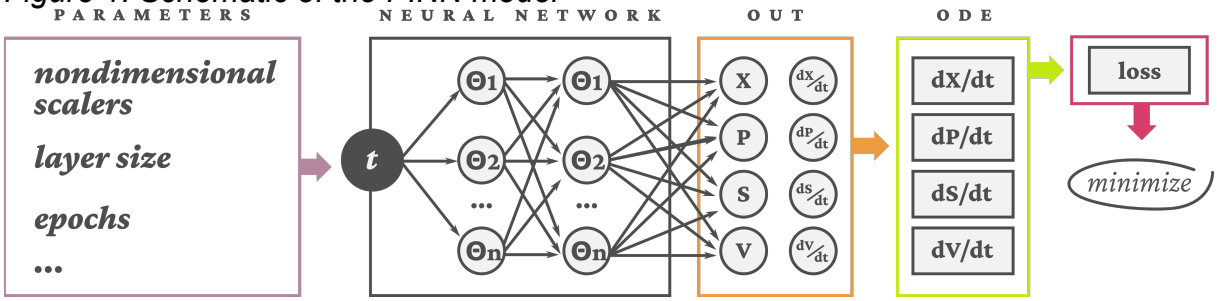

Figure 2: Nondimensional test, layer test and comparison between experimental data and PINN results

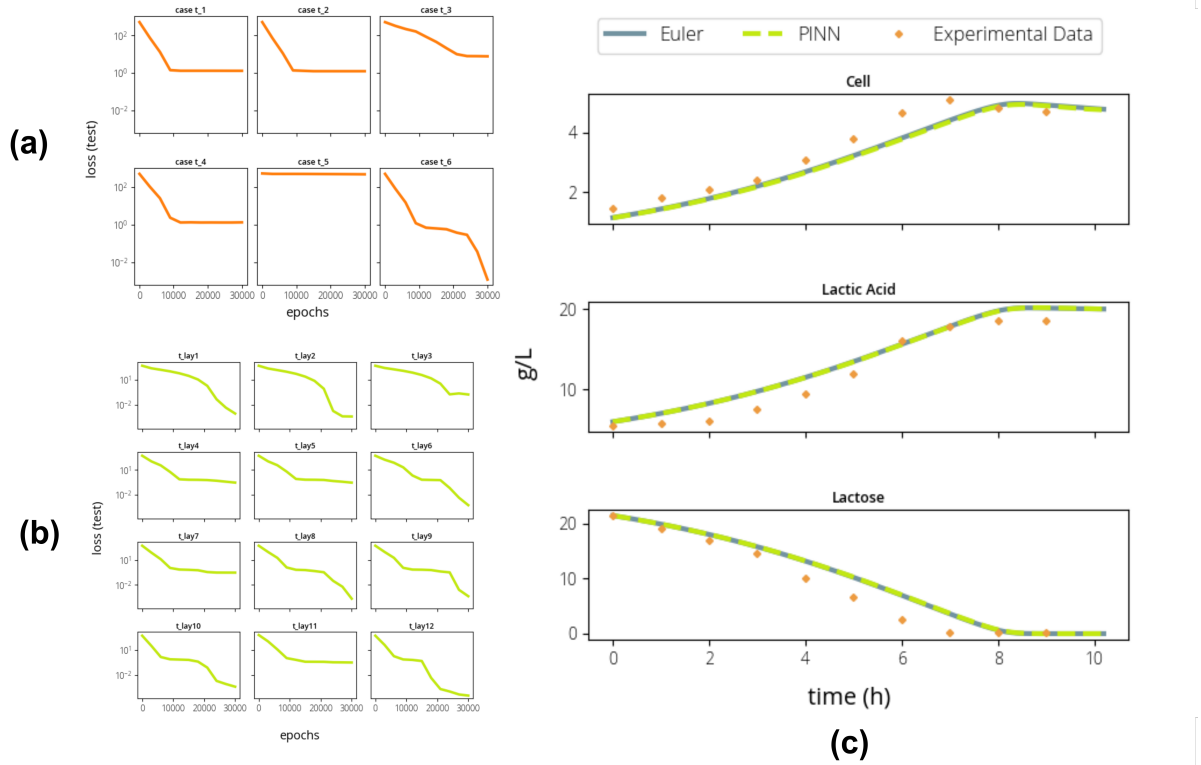

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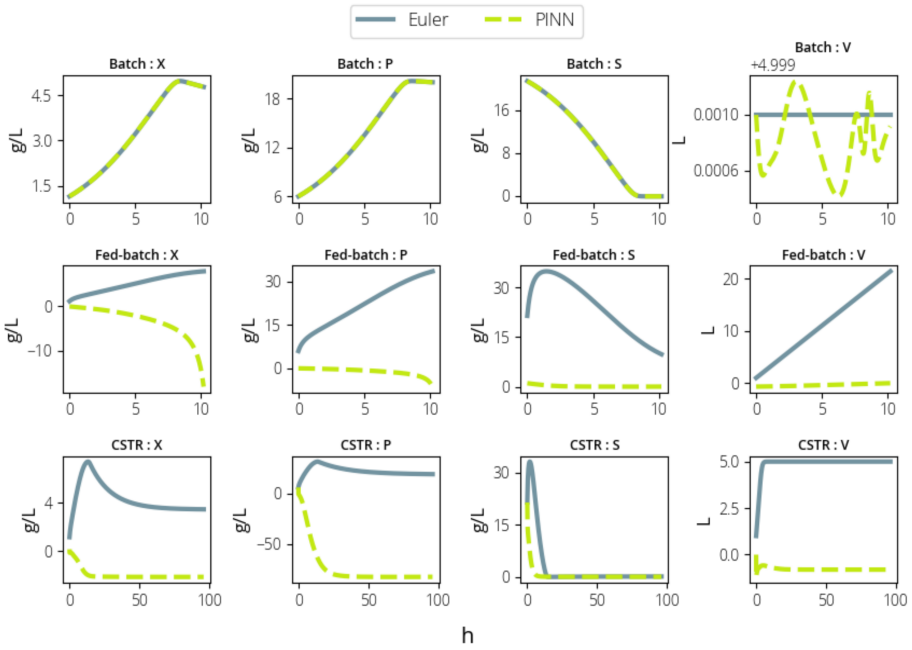
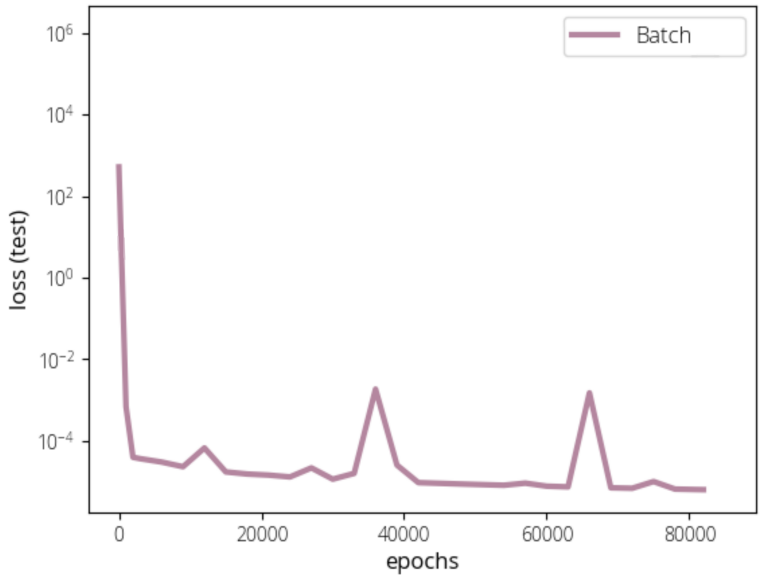
Figure 3: PINN results comparison for Bacth, Fed-batch and CSTR reactors



(a)



(b)

2 DECLARATION OF INTEREST

Declarations of interest: none

3 HIGHLIGHTS

1) Volume and biomass concentration are the more relevant variables for loss minimization
2) The batch reactor was successfully simulated using PINN
3) PINNs were not capable of appropriately simulate reactors with volume variation
4) Strategies for simulating reactors with volume in transient state are suggested