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(54) Title: SYSTEM AND METHOD FOR CONTINUOUS BIOPROCESSING SIMULATION

(57) Abstract: The present disclosure relates to a system and method for continuous bioprocessing simulation utilizing parameterized and pre-validated model components. The system selects validated equations from a catalogue to construct modular unit operation models, which are then instantiated into configured instances. These instances are interconnected into an integrated flowsheet simulation, which is co-simulated to capture the transient behavior of components with different time constants. The parametrized, modular modeling approach enables rapid and robust simulation of continuous biopharmaceutical production processes by assembling simulations from pre-qualified building blocks. This facilitates efficient digital prototyping and analysis of integrated continuous bioprocess systems.