Electronic Supplementary Material (ESI) for Reaction Chemistry & Engineering.
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Supplementary material.

Numerical and experimental evaluation of the hydrodynamics in a tubular swirling flow reactor and its comparison with the mixing regime of a stirred dark fermenter.

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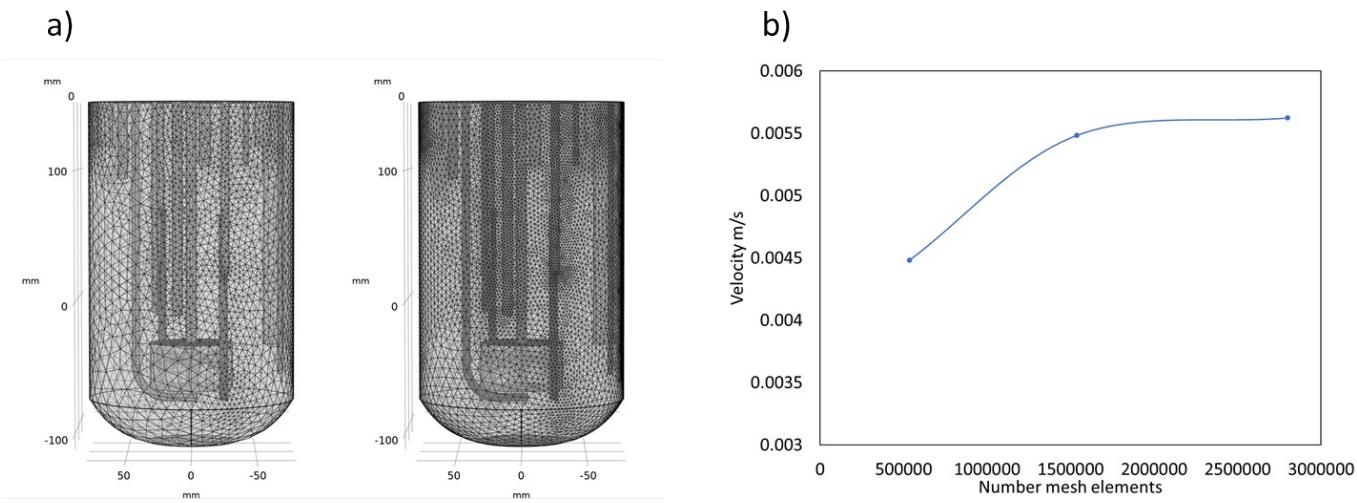


Suplementary Material S1. Mesh independence analysis. a) 3-D computational subdomain consisting of approximately 550 000 and 2 800 000 elements (coarse and finer mesh schemes). Here refinement of mesh on corners can be seen. b) Plot of calculated velocity magnitude as a function of grid elements for approx. 550 000, 1 700 000, and 2 800 000 elements. Between Normal and Finer mesh there is an approximately 3 % error, even at reactor edges. In this way, a finer meshing scheme was used in all simulations performed.

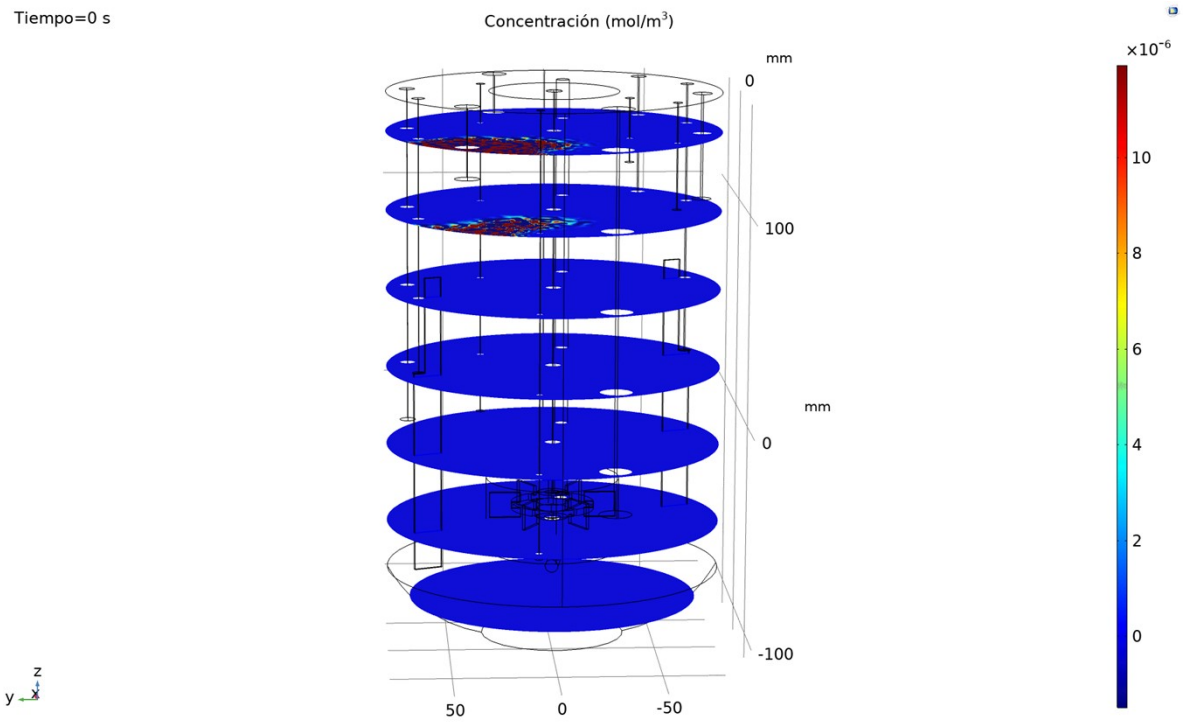


Figure S2. Animation provided for CSTR reactor, (Please also refer to the animation provided as a .gif file).

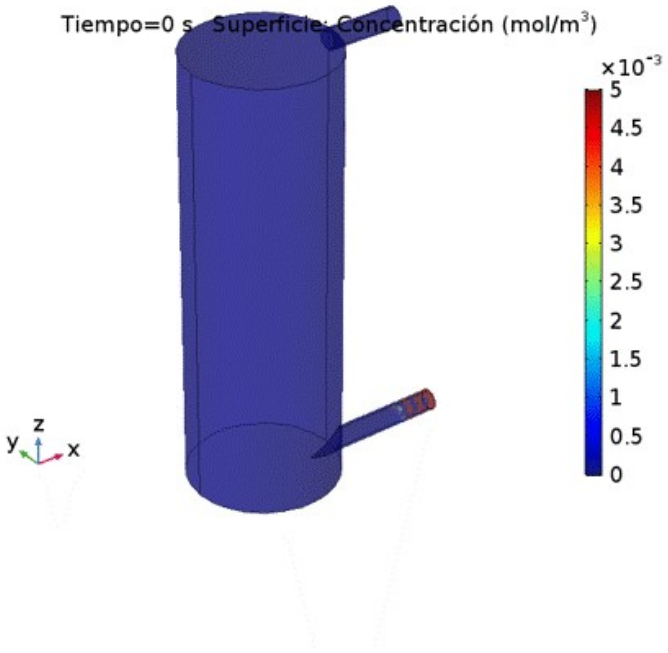
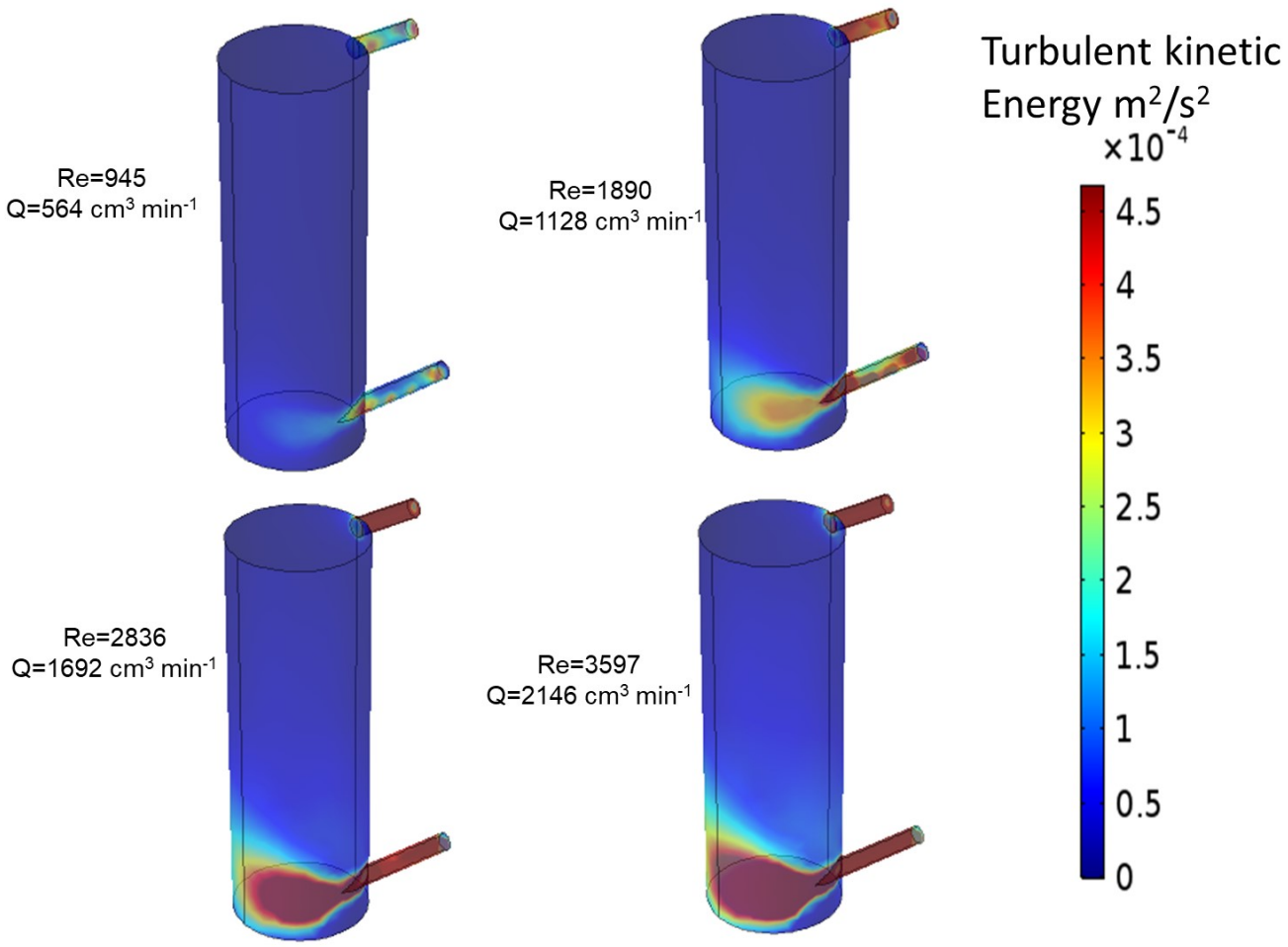


Figure S3. Figure S2. Animation provided for TSFR reactor, (Please also refer to the animation provided as a .gif file).



Supplementary Material S4. Kinetic turbulent energy calculated in the TSFR reactor at different inlet flow velocity conditions (shown in the Figure in isometric projection).