Abstract Submitted
for the DFD19 Meeting of
The American Physical Society

On the locomotion and collective behavior of biopolymer producing bacteria[1] SARA MALVAR, BRUNO SOUZA CARMO, JULIO ROMANO MENEGHINI, University of Sao Paulo — One of the main causes of global warming and climate change is methane, which is released to the atmosphere during oil extraction. Because of that, the need to transform natural gas into other products arises, aiming at mitigation of gases and generaton of bioproducts. The methylotrophs bacteria can use methane and methanol as carbon sources to produce biopolymers, including polyhydroxybutyrate (PHB), a promised substitute for the environment contaminant oil-derived poly-propylene. This kind of bacteria can be very effective to help to decrease PHB price production and promote its use in substitution of several environment contaminant plastics. However, deep studies regarding the microbial sequestration of methane and gas convertion into biopolymers are still lacking on the literature. The uptake of methane and methanol by the consortium of bacteria is still inefficient and the causes related to locomotion and the collective behavior of the microorganisms remain unknown. In this study, we analyze the behavior and interaction of the various bacteria that are part of the consortium, observing how the type of flow produced by the addition of activity in the system and the fluid-structure interaction modify the production of PHB.

[1]FAPESP 2019/15754-7

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Date submitted: 01 Aug 2019 Electronic form version 1.4