Abstract Submitted
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Effect of cell size and shear stress on bacterium growth rate HADI FADLALLAH, Université Paris Diderot, MOJTABA JARRAHI, Université Paris Sud, ÉRIC HERBERT, HASSAN PEERHOSSAINI, Université Paris Diderot, PEF TEAM — Effect of shear stress on the growth rate of *Synechocystis* and *Chlamydomonas* cells is studied. An experimental setup was prepared to monitor the growth rate of the microorganisms versus the shear rate inside a clean room, under atmospheric pressure and 20 °C temperature. Digital magnetic agitators are placed inside a closed chamber provided with airflow, under a continuous uniform light intensity over 4 weeks. In order to study the effect of shear stress on the growth rate, different frequencies of agitation are tested, 2 vessels filled with 150 ml of each specie were placed on different agitating system at the desired frequency. The growth rate is monitored daily by measuring the optical density and then correlate it to the cellular concentration. The PH was adjusted to 7 in order to maintain the photosynthetic activity. Furthermore, to measure the shear stress distribution, the flow velocity field was measured using PIV. Zones of high and low shear stress were identified. Results show that the growth rate is independent of the shear stress magnitude, mostly for *Synechocystis*, and with lower independency for *Chlamydomonas* depending on the cell size for each species.

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