

# Effective viscosity of microswimmer suspensions

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The measurement of a quantitative and macroscopic parameter to estimate the global motility of a large population of swimming biological cells is a challenge. We performed experiments on the rheology of active suspensions and we showed that effective viscosity of sheared suspensions of live unicellular motile micro-algae (*Chlamydomonas Reinhardtii*) is far greater than for suspensions containing the same volume fraction of dead cells. We relate these macroscopic measurements to the orientation of individual swimming cells under flow. We also performed numerical simulations for algae suspensions. These simulations allow us to discuss the relevant ingredients of the modelling of such active suspensions.

## Références

1. S. Rafai, L. Jibuti, and P. Peyla, Physical Review Letters **104**, 098102 (2010).