

Active suspensions under flow

Salima Rafai, Philippe Peyla, Michaël Garcia and Levan Jibuti

*LIPhy, University Joseph Fourier and CNRS, Grenoble, France**

The measurement of a quantitative and macroscopic parameter to estimate the global motility of a large population of swimming biological cells is a challenge. Experiments on the rheology of active suspensions have been performed. Effective viscosity of sheared suspensions of live unicellular motile microalgae (*Chlamydomonas Reinhardtii*) is far greater than for suspensions containing the same volume fraction of dead cells [1]. We relate these macroscopic measurements to the orientation of individual swimming cells under flow. Moreover results concerning the coupling between flow and biased swimming of cells will be presented.

References

- [1] Salima Rafai Levan Jibuti, and Philippe Peyla., Phys. Rev. Lett., **104**, 098102 (2010).

*Electronic address: salima.rafai@ujf-grenoble.fr