

Abstract Submitted  
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**The effect of shear thinning viscosity on the performance of low Reynolds number swimmers** R. ZENIT, F. GODINEZ, Universidad Nacional Autonoma de Mexico, C. BELLEVILLE, ENSEEIHT, France, E. LAUGA, University of California at San Diego — In addition to viscoelastic effects, biological fluids can also show shear-thinning viscosity as part of their non Newtonian behavior. To assess the effect of a varying viscosity with shear rate on the performance of swimming, we conducted experiments using two types of magnetically driven swimmers. We consider oscillating flexible tail and rotating rigid coil devices to test this effect. We prepared carbopol-based inelastic shear-thinning fluids with different values of the thinning coefficient,  $n$ , and an equivalent Newtonian liquid for comparisons. The motion was filmed and the swimming velocity was measured via digital image processing. We found that the swimming efficiency changes in an important manner if the fluid does not have constant viscosity. We will present and discuss our preliminary results. To our knowledge, this effect has not been addressed in the specialized literature to date.

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