

Abstract Submitted
for the DFD09 Meeting of
The American Physical Society

Effect of Varying the Angle of Attack of the Scales on a Biomimetic Shark Skin Model on Embedded Vortex Formation¹ JENNIFER WHEELUS, AMY LANG, University of Alabama — The skin of fast-swimming sharks is proposed to have mechanisms to reduce drag and delay flow separation. The skin of fast-swimming sharks is covered with small denticles, on the order of 0.2 mm, that if bristled create cavities. It has been shown that for an angle of attack of 90 degrees, vortices form within these cavities and impose a partial slip condition at the surface of the cavity. This experiment focuses on smaller angles of attack for denticle bristling, closer to the range thought to be achieved on real shark skin. A 3-D bristled shark skin model with varying angle of attack, embedded below a boundary layer, was used to study the formation of cavity vortices through fluorescent dye visualization and Digital Particle Image Velocimetry (DPIV). The effect of varying angle of attack on vortex formation will be discussed.

¹Funding for this research has been received from the Lindbergh Foundation, NASA AL-EPSCoR, and NSF.

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Date submitted: 04 Aug 2009

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