

Kathryn Faust

Biomedical Engineering

Year in School: Junior

Hometown: St. Louis, Mo.

Faculty Mentor: Dr. John Viator, Biological Engineering

Determination of the efficacy of an applied vacuum at the skin surface during the laser therapy of Port Wine Stain (PWS)

Kate Faust, Ross Reule, & John Viator

We will be doing experiments *ex vivo* using pig skin, which is very similar and much more attainable than human skin, to test the stress vs. strain relationship, elasticity (Young's Modulus) and research skin mechanics. Certain pathological conditions in skin, such as basal cell carcinoma, exhibit changes in skin mechanics. Thus, measuring skin elasticity may help in clinical identification of skin cancer borders. We will be using degraded pig skin and a tensile tester to create a model of skin strength. Skin will be degraded using collagenase to change the skin mechanical properties. After getting the results and data we will then compare this to skin deformation experiments using a vacuum cup which we can get from a simple and pain-free clinical study. By applying a low level vacuum to human skin, *in vivo*, we will measure the deformation of skin and extract the elasticity. Eventually, we would like to use this vacuum to help with laser light therapy to reduce the appearance of birthmarks made from blood-vessels (vacuum details and usage) as well as to diagnose other skin pathologies.