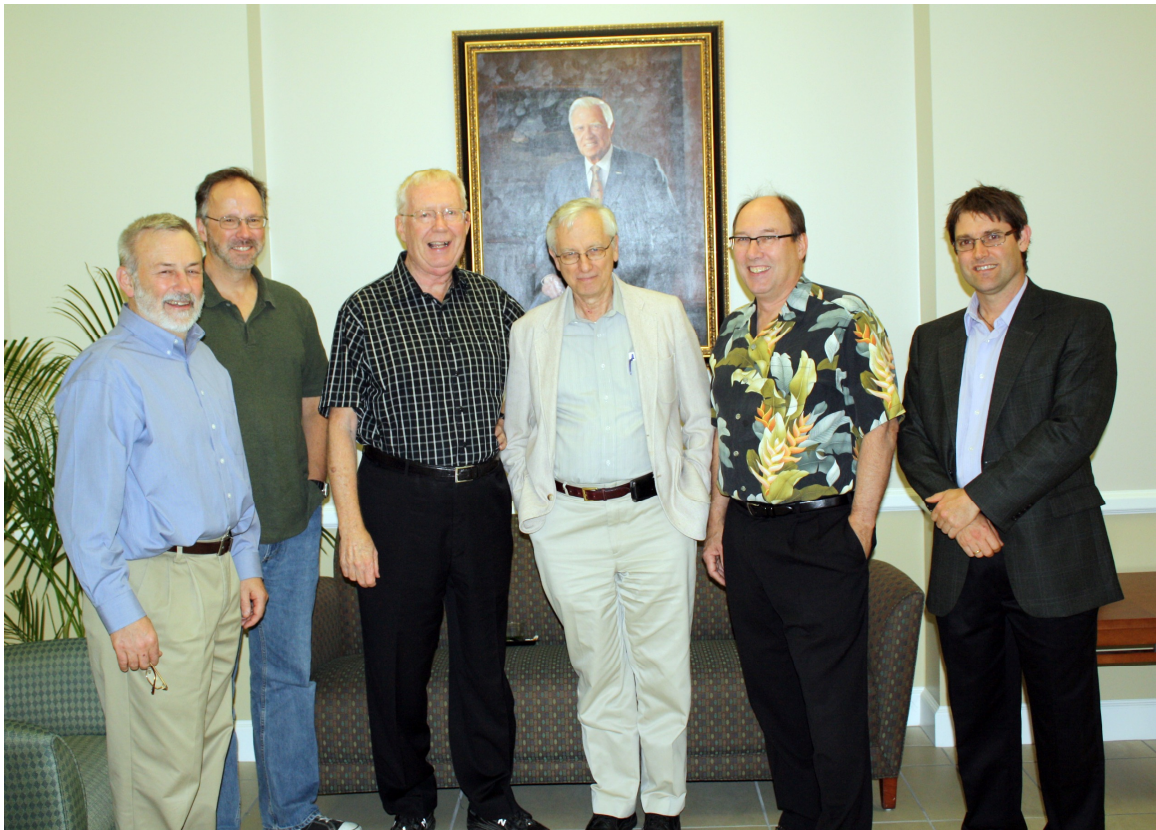
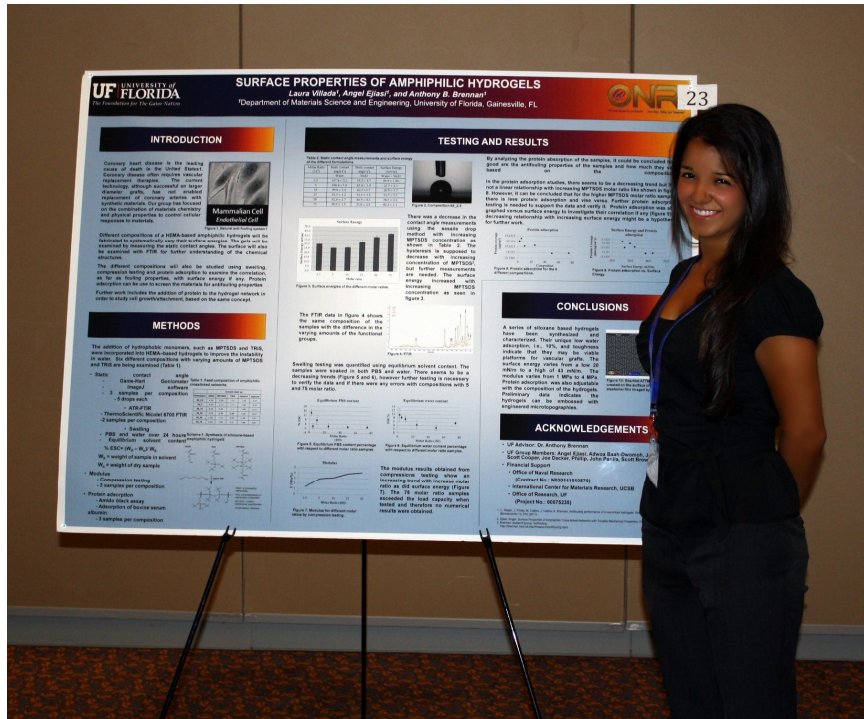


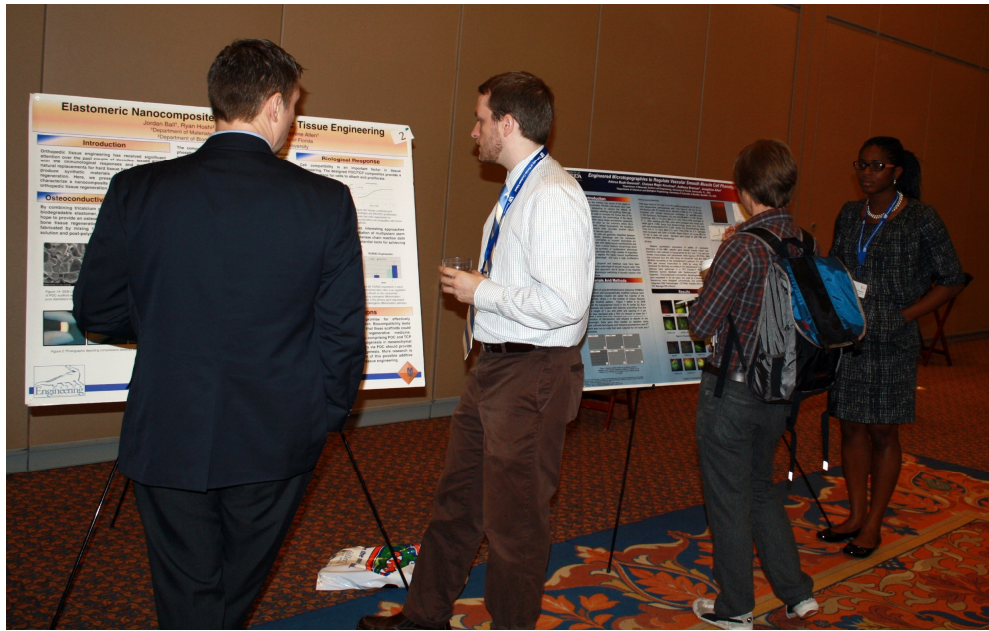
University of Florida Biomaterials Day March 16, 2012













UF **Synthesis and Surface Functionalization of Gold Nanorods for Photothermal Therapy of Cancer**
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15

INTRODUCTION
 Cancer is the leading cause of death in the United States. Photothermal therapy (PTT) is a non-invasive cancer treatment that uses gold nanorods (GNRs) to absorb near-infrared (NIR) light and convert it into heat, which can kill cancer cells. However, the high surface charge density of GNRs leads to aggregation, which reduces their effectiveness. Surface functionalization with polyethylene glycol (PEG) can improve their stability and biocompatibility.

NANOROD SYNTHESIS
 GNRs were synthesized using a seed-mediated growth method. The seed solution contained gold chloride, ascorbic acid, and citrate. The growth solution contained gold chloride, ascorbic acid, citrate, and PEG. The reaction was carried out at 25°C for 24 hours.

RESULTS
 The synthesized GNRs were characterized using UV-Vis spectroscopy, TEM, and DLS. The UV-Vis spectra showed a surface plasmon resonance (SPR) peak at approximately 220 nm. TEM images showed that the GNRs were well-dispersed and had a uniform morphology. DLS measurements showed that the GNRs had a narrow size distribution.

SUMMARY AND FUTURE WORK
 The synthesized GNRs were well-dispersed and had a uniform morphology. Future work will focus on optimizing the surface functionalization process to improve the stability and biocompatibility of the GNRs.

REFERENCES
 1. Bracho-Sanchez, E., Lee, J., and Sorg, B. S. (2018). Synthesis and Surface Functionalization of Gold Nanorods for Photothermal Therapy of Cancer. *ACS Applied Materials & Interfaces*, 10(12), 10123-10131.

UF **EMBOSSING POLYETHYLENE FOR ANTIFOULING**
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21

INTRODUCTION
 Biofouling is a major problem in many industries, including marine, medical, and industrial. It is caused by the accumulation of microorganisms on surfaces. Antifouling coatings are used to prevent biofouling, but they often have a short lifespan. Embossing polyethylene (PE) can create a surface with a rough, porous structure that prevents microorganisms from adhering.

METHODS
 PE samples were prepared using a hot embossing process. The embossing was carried out at 200°C for 10 minutes. The embossed samples were characterized using SEM, AFM, and contact angle measurements.

RESULTS
 The embossed PE samples showed a rough, porous surface structure. SEM images showed that the embossed surface had a high surface area. AFM images showed that the embossed surface had a high aspect ratio. Contact angle measurements showed that the embossed surface had a high contact angle, which indicates that it is hydrophobic.

Sample	Area (μm ²)	Height (μm)	Contact Angle (°)
Smooth PE	1.00	0.00	105
Embossed PE	1.50	0.50	115

CONCLUSIONS
 The embossed PE samples showed a rough, porous surface structure that prevented microorganisms from adhering. This suggests that embossing PE is a promising approach for creating antifouling coatings.

ACKNOWLEDGEMENTS
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