Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

Synthetic Adhesive Attachment Discs based on Spider Pyriform Silk Architecture[1] DHARAMDEEP JAIN, VASAV SAHNI, ALI DHINOJWALA, The University of Akron — Among the variety of silks produced by spiders, pyriform silk is used in conjunction with the dragline silk to attach webs to different surfaces. Cob weaver spiders employ different architectural patterns to utilize the pyriform silk and form attachment joints with each pattern having a characteristic adhesive performance. The staple pin architecture is a one of the strongest attachment designs employed by spiders to attach their webs. Here we use a synthetic approach to create the a similar patterned architecture attachment discs on aluminum substrate using thermoplastic polyurethane. Measurable pull off forces are generated when the synthetic discs are peeled off a surface. This innovative adhesive strategy can be a source of design in various biomedical applications.

[1]Financial Support from National Science Foundation

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Date submitted: 10 Nov 2013 Electronic form version 1.4