Durable and Versatile Immobilized Carbonic Anhydrase on Textile Structured Packing for CO_2 Capture

*Jialong Shen, Yue Yuan, Sonja Salmon**

Department of Textile Engineering, Chemistry and Science, Wilson College of Textiles, North Carolina State University, Raleigh, NC 27695-8301, United States.

*Corresponding author: E-mail: sisalmon@ncsu.edu

SUPPORTING INFORMATION

Total 6 pages including 5 figures.

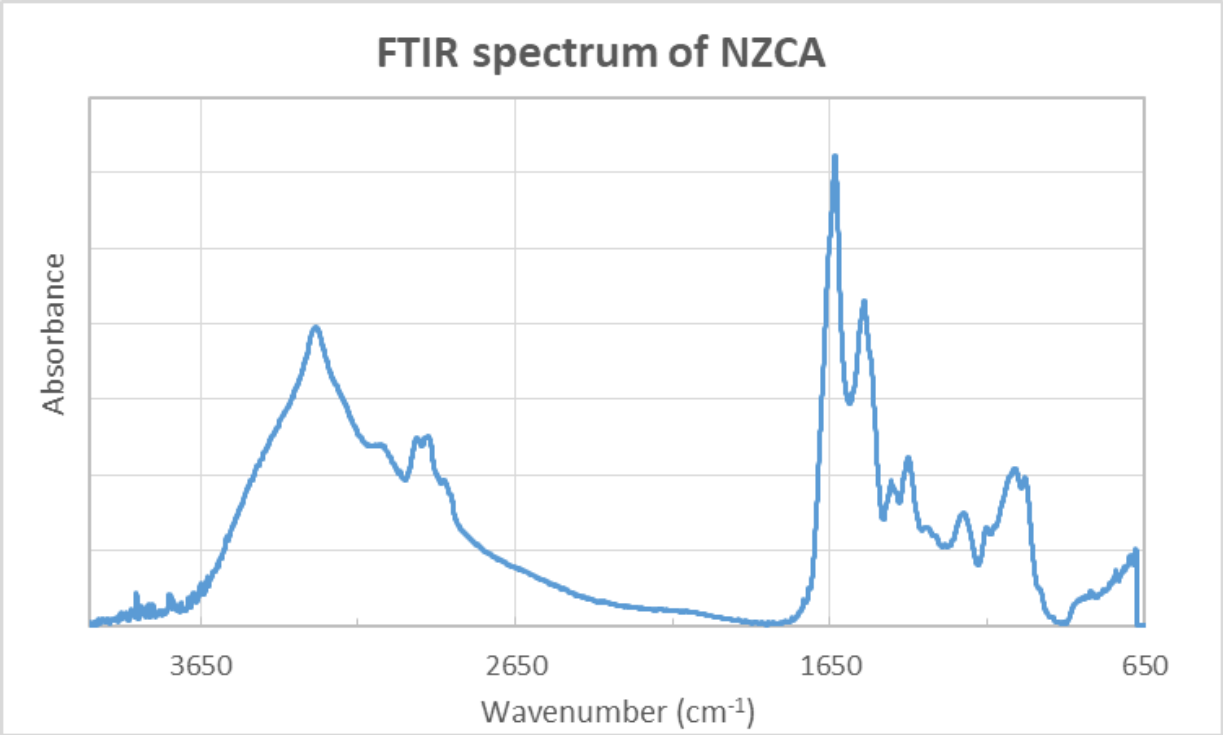


Figure S1 FTIR spectrum of NZCA.

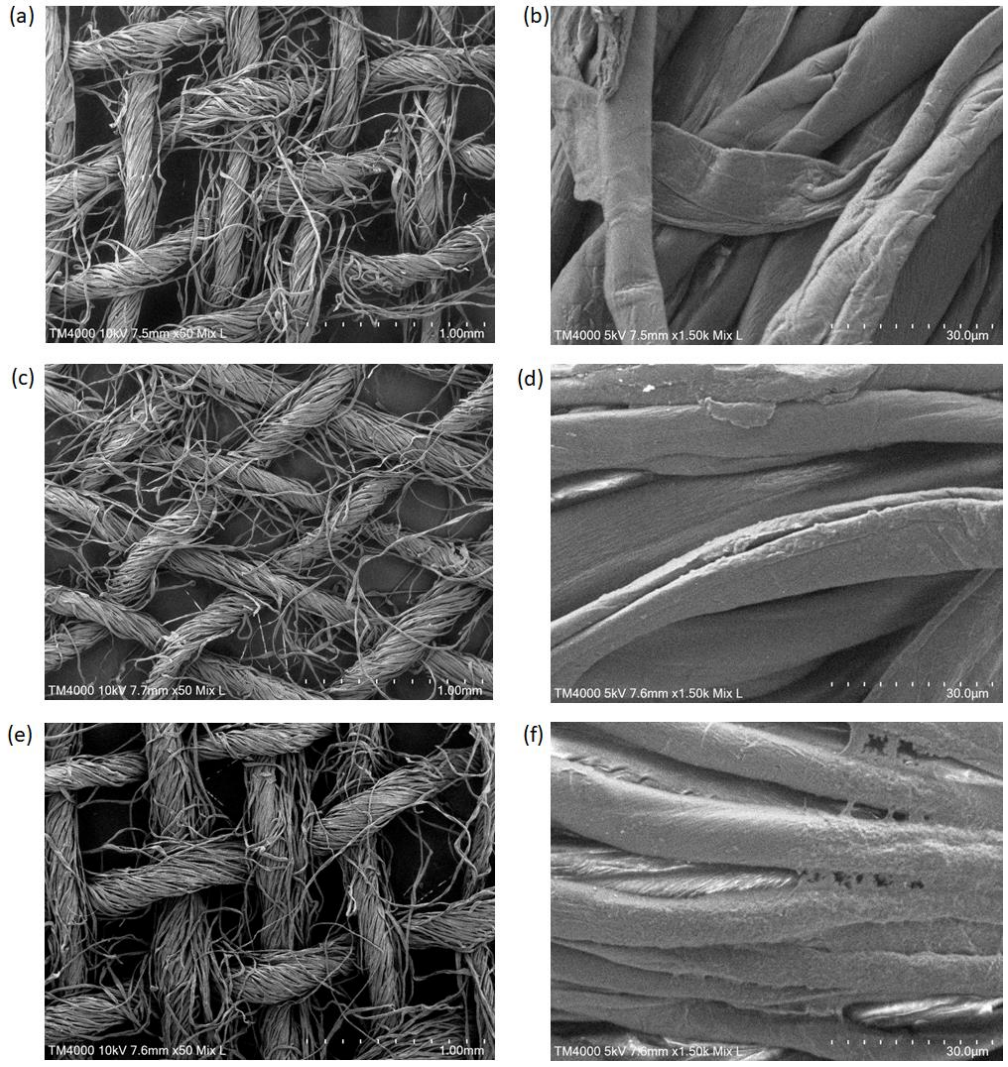


Figure S2 SEM images of (a) and (b) crosslinked chitosan coating with entrapped NZCA, (c) and (d) chitosan coating with entrapped NZCA + surface covalently immobilized NZCA mono-layer, and (e) and (f) chitosan coating with entrapped NZCA + surface covalently immobilized NZCA 3-D aggregate, all on cheesecloth support materials.

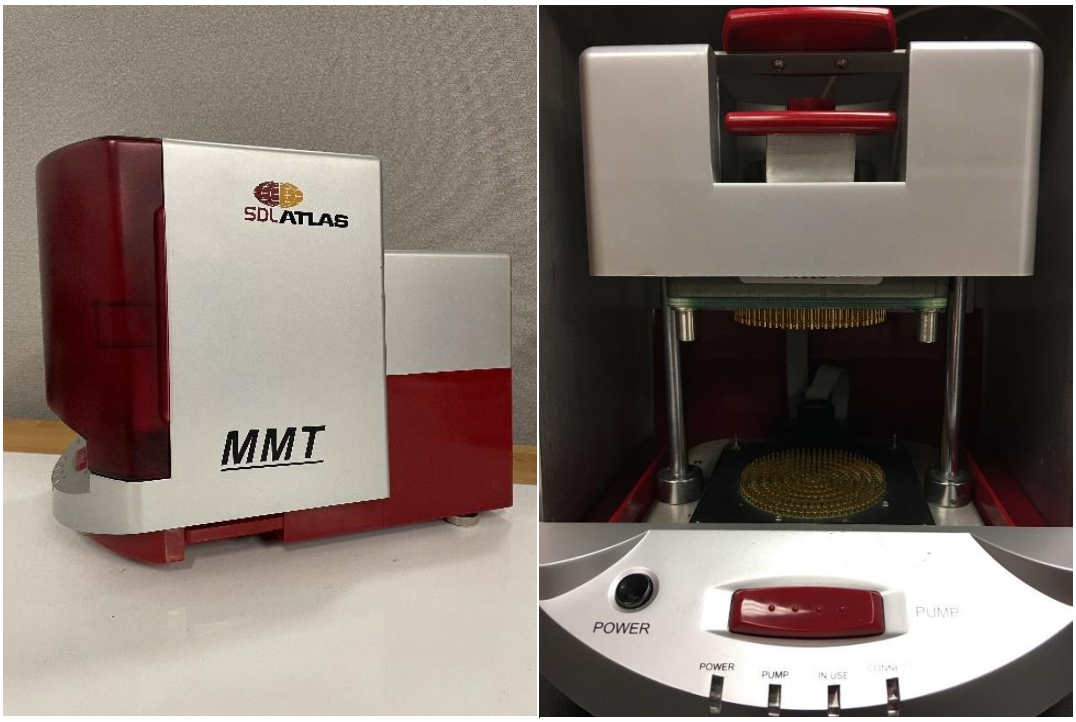


Figure S3 Side (left) and front (right) view photos of Moisture Management Tester (MMT).

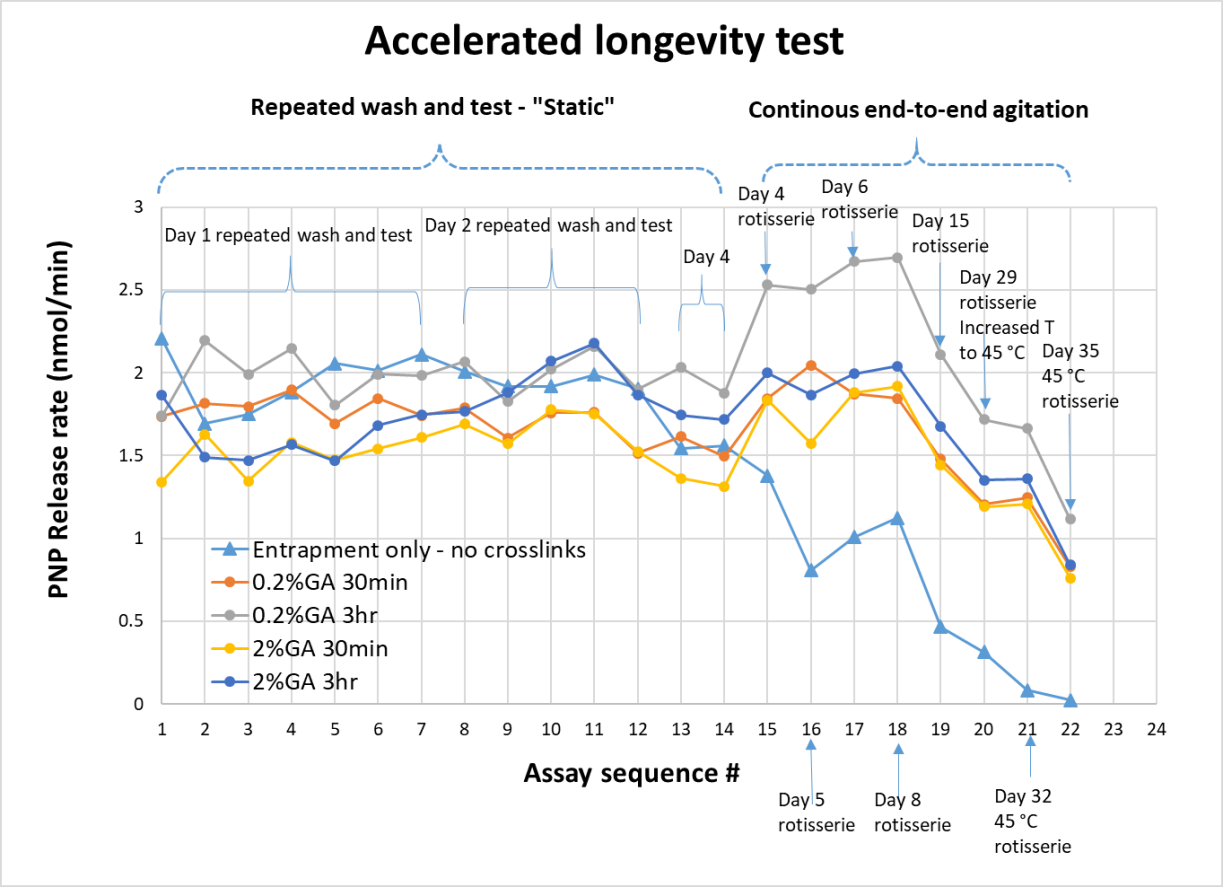


Figure S4 Effects of crosslinking conditions on the longevity of biocatalytic textiles were indistinguishable by a "static" cycling test (Assay# 1-14) but were differentiated after adding continuous end-to-end mechanical agitation (Assay# 15-22).

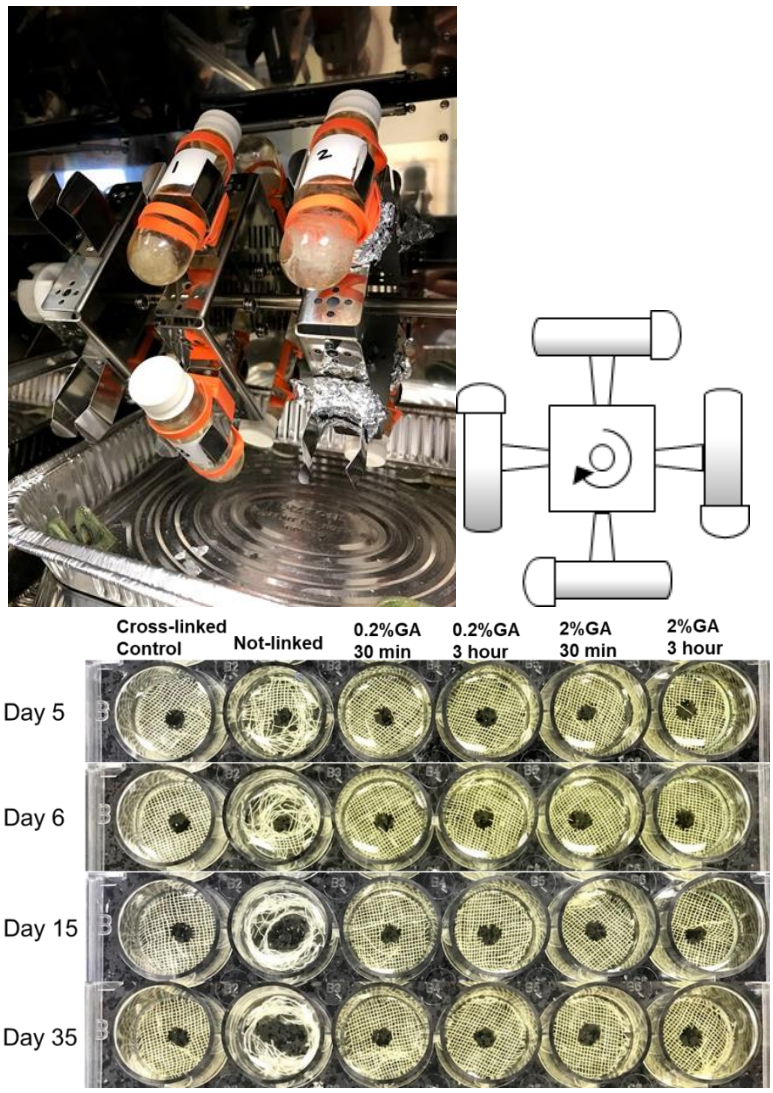


Figure S5 Accelerated longevity test using rotisserie-type end-to-end mixing incubator: photo of the system (upper left), schematics showing the mechanical motion (upper right), and appearances of different samples over time (bottom).