

1. Summarize the methodology for generation of biomimetic protective surfaces presented in the paper.

Structural materials in nature achieve diverse functions such as toughness, flexibility and strength, through spatial variation in material properties and morphometry across organizational hierarchies with precise interfacial control. In order to translate these structures in soft robotics and engineering, we mimic these structures through biomimetics. The methodology of biometric protective surfaces are introduced in the paper and there is a full process of mining these natural structures. For example, in the paper they explain their experience with the fish structure. They used the 3D modeling software Rhino 3D in order to model their structure with precision and accuracy. In addition, they undergo geometrical analysis and parametric design in order to get a better understanding of the geometry of the structure. On top of their design in Rhino 3D, they executed a mesh task to further define their image. After, they 3D print using a multi-material printer designed using CAD software. In the example of the fish, they show how each individual part of the fins are replicated in the designing software and the different parameters associated with it. The article is also funded by the army and this shows that the army is interested in how the research of the exoskeleton can be translated to something that will benefit the army. This is a prime example of how CAD and 3D design can be beneficial to our society. As a result, several structures in nature can be replicated in 3D design to give us a better understanding and so we can potentially benefit from it as well.