



Folding pathways and energy landscapes in origami-inspired systems

Prof. Diego Misseroni and the S-FOAM team
Università degli Studi di Trento

How origami is shaping the future of materials, structures and machines

Origami-inspired structures, in particular Kresling and trapezoid-based patterns, can be engineered to display programmable mechanical behaviours. This is achieved through the integration of mathematical modelling, experimental investigations and a range of manufacturing methods such as laser cutting, milling and 3D printing.

In this way, the influence of crease geometry, material properties and folding sequences on deformation modes and energy landscapes can be revealed. The resulting insights enable the design of adaptive, foldable systems with applications in robotics, materials science and mechanical computing.

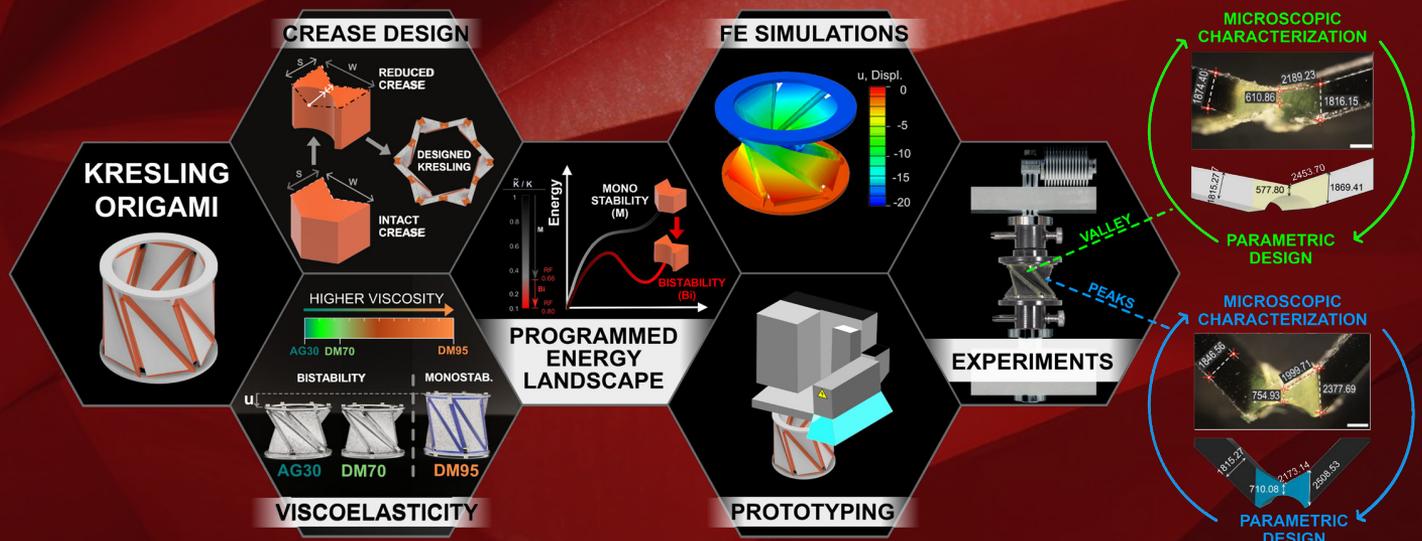


Figure 1: Research design overview showing how crease geometry and material viscosity influence bistability and energy landscapes in Kresling origami structures. Adapted from: Mora et al., Programming the energy landscape of 3D-printed Kresling origami via crease geometry and viscosity.