

Supplementary Material (SI) for the article:
“Buckling patterns in biaxially pre-stretched bilayer shells:
wrinkles, creases, folds and fracture-like ridges”

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Supplementary Movies:

SI Movie 1: Representative example of the *wrinkling buckling pattern* in a sample with stiffness ratio $\xi = 3.1$ and pre-stretch $\lambda_o = 1.55$. The sample was deflated at a (de)stretch rate of $d\lambda^s/dt = -0.41$. The video was taken 30 seconds from the start of the deflation process.

SI Movie 2: Representative example of the *ridges' buckling pattern* in a sample with stiffness ratio $\xi = 1.5$ and pre-stretch $\lambda_o = 1.83$. The sample was deflated at a (de)stretch rate of $d\lambda^s/dt = -0.41$. The video was taken 60 seconds from the start of the deflation process.

SI Movie 3: Representative example of the *hierarchical ridges' buckling pattern* in a sample with stiffness ratio $\xi = 2.52$ and pre-stretch $\lambda_o = 2.36$. The sample was deflated at a (de)stretch rate of $d\lambda^s/dt = -0.41$. The video was taken 60 seconds from the start of the deflation process.

SI Movie 4: Representative example of the *creases' buckling pattern* in a sample with stiffness ratio $\xi = 0.7$ and pre-stretch $\lambda_o = 1.83$. The sample was deflated at a (de)stretch rate of $d\lambda^s/dt = -0.41$. The video was taken 75 seconds from the start of the deflation process.

SI Movie 5: Representative example of the *folds' buckling pattern* in a sample with stiffness ratio $\xi = 0.4$ and pre-stretch $\lambda_o = 2.36$. The sample was deflated at a (de)stretch rate of $d\lambda^s/dt = -0.41$. The video was taken 120 seconds from the start of the deflation process.

SI Movie 6: highlights the hierarchical nature of ridges, which is more clearly seen at a slower (de)stretch rate. The sample has a stiffness ratio $\xi = 3.1$ and pre-stretch $\lambda_o = 2.36$, and was deflated at a (de)stretch rate of $d\lambda^s/dt = -0.027$. The video was taken after the substrate stretch had relaxed to $\lambda^s = 0.425$ from the pre-stretched state.

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