

## **Description of Additional Supplementary Files**

**Supplementary Movie 1:** Pure shear test of the precut soft gel

**Supplementary Movie 2:** Pure shear test of the precut hard gel

**Supplementary Movie 3:** Pure shear test of the precut TPN gel

**Supplementary Movie 4:** Tensile test of the uncut TPN gel

**Supplementary Movie 5:** Peel test of the bilayer TPN gel