Tailoring Woven Structures to Enhance Drapability in Single-Layer Fabrics

Utilization Of Woven Structure In Draping

- Each woven structure interweaves differently resulting in variations of:
  - **Crimp**: a result of the interlacing of the warp and weft throughout the weaving process
  - **Density**: Interlacing reduces the density of the fabric. More interlacing = Lower yarn density
  - **Structural Stability**: More interlacing = less movement possibility between the warp and weft yarns
- A combination of Plain Weave, Satin and Basket Weaves were used for this trial
- A simple oval pattern was defined and produced

From 2D to 3D

- Fabric weaves flat in a single Layer using a jacquard machine equipped with a warp beam
- Initial tests with polyester were conducted utilizing plain, twill, satin and basket weaves
- The differences in the woven patterns allow yarns to shift within the structure

From 2D to 3D: Advantages and Possibilities

- A clear defined line is visible to allow for easier draping in a form
- When pressure is applied to the edges, the form appears with minimal yarn deformation
- No wrinkling is apparent along the edges of the form
- Decreased puckering should lead to increase mechanical properties
- The single layer construction allows for easier manufacturing
- Less cutting required to create complex forms