

## Through a Stained Glass Window

Eonyou Shin and Chanmi G. Hwang,  
Iowa State University, USA

Keywords: Laser Cutting, Engineered Print, Digitized Pattern

This dress was inspired by the gentle play of the moonlit night sky that is reflected through the stained glass. The purpose of this design was to incorporate various design techniques using three different technologies—pattern digitizing, digital printing, and laser cutting—and develop a structural unbalanced hem dress. This design contributes to a new way of integrating emerging technologies into an innovative design process.

A dress was draped on a size 8 dress form and the patterns were directly digitized into OptiTex PDS. The digital print was developed by using a brush tool in Photoshop to create an abstract image of the movement of the clouds in the night sky. Then, it was placed on the digitized pattern pieces to print using the Mimaki TX2-1600 printer onto the 100% medium weight cotton twill. The printed fabric was steamed and washed to prevent the color from fading. To create the effect of twinkling stars, Glow in the Dark spray was applied all over to the digitally printed fabric: it was sprayed gradually from the bottom of the skirt to top. Then, the fabric was air-dried.

Using Adobe Illustrator, the pattern of the stained glass window was designed by overlapping numerous circles of the same size. For laser cutting, the designed patterns in two dimensional was strategically placed on the digitized patterns to fit three dimensional form of the body in Illustrator software: (1) For the upper bodice, the part of the designed



Figure 1. Front View

patterns was placed on the front bodice; (2) For the skirt, a lower shell effect was used to create a wedge from a rectangular shape of the designed pattern with 5% expansion at the lower part; (3) each wedge-shaped pattern was placed onto the digitized patterns of the flare skirt. On the black 100% cotton broadcloth, a total of 11 pieces for skirt patterns and 1 piece for the front bodice with a dimension of 32" by 17" were laser cut by using the Universal Laser cutter (VLS 660). The laser cut patterns were attached to the digitally printed patterns by ironing small pieces of fusible bonding web and machine stitching the edges of the patterns together. To capture the effect of twinkling stars, UV rays were shined shortly before taking the photograph.

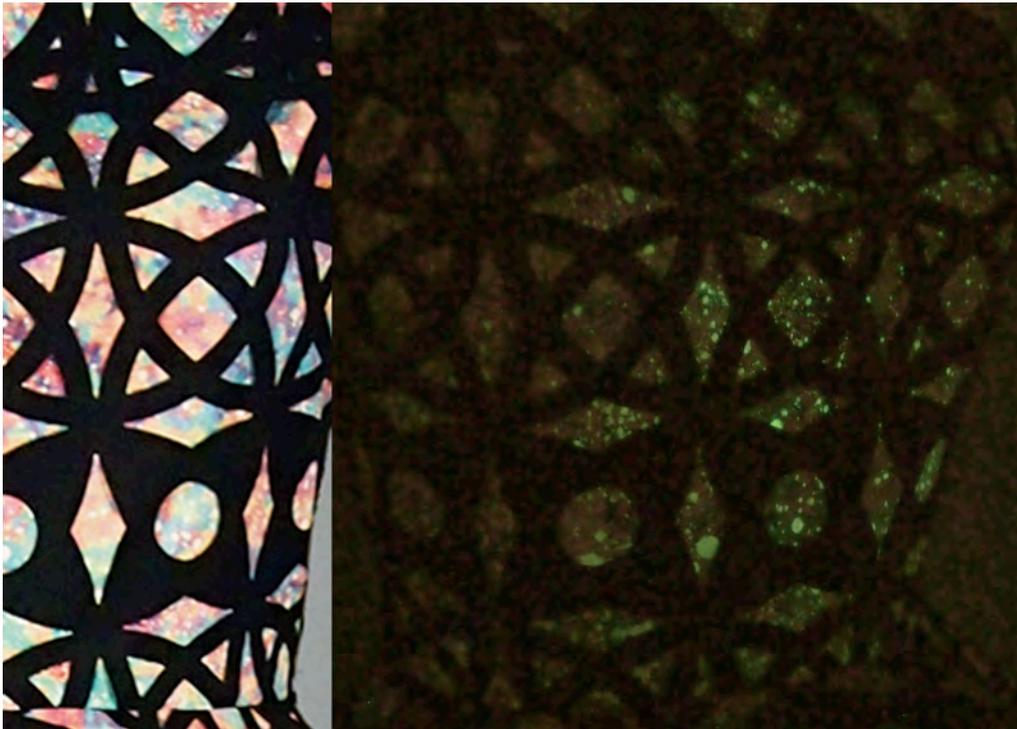


Figure 2. Details