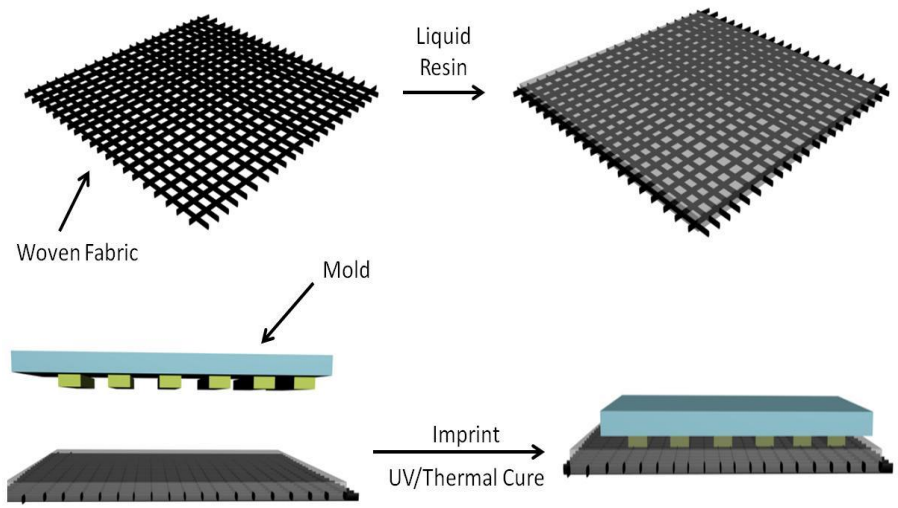
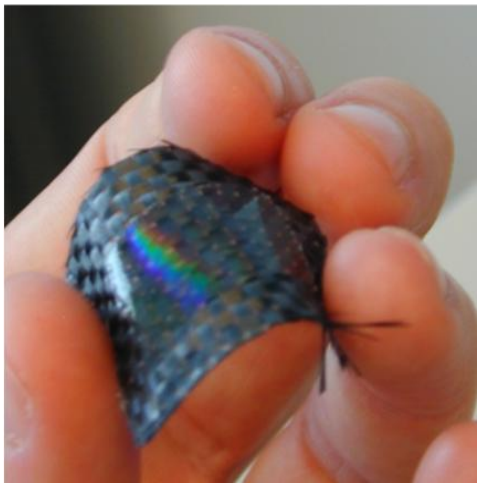
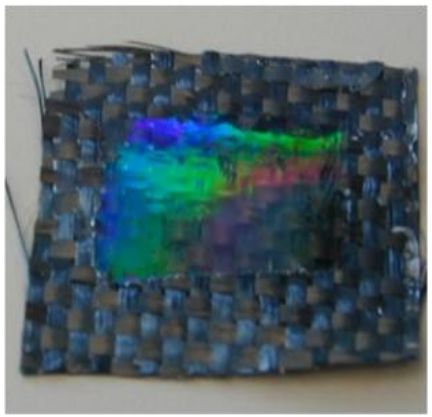
Nanoimprinting on Impregnated Fabric Substrates

The Carter and Crosby research groups have collaborated to develop new methods to overcome existing challenges in the use of nanoimprinting patterning on flexible substrates in a roll-to-roll configuration. One of the major challenges is the delamination of imprinted materials from flexible substrates, such as PET films.

To overcome delamination, we have recently proposed and demonstrated the use of woven substrates, rather than films, to allow mechanical interlocking to help in preventing unwanted delamination. In our process, we impregnate a woven fabric, with a curable formulation, which can subsequently be imprinted with a nanostructured pattern (top schematic). Our initial results (bottom images) are encouraging, and we are currently determining the material and spatial limits of this approach, as well as the mechanical properties of imprinted samples.







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