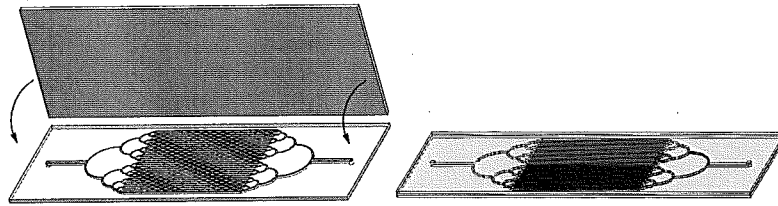


### PCL Fabrication Process

The bonding process was carried out using PCL-coated polymers to cap the previously fabricated channels. Thin PCL coat can be produced via spin coating, heat pressing, spraying, or dipping depending on the desired final PCL layer thickness and microchip application. PCL solution was made by dissolving bulk PCL pellets (Sigma Aldrich, St. Louis, MO, 63103) in organic solvent such as chloroform. A thinner PCL solution can be obtained by mixing in more solvent into the PCL solution. A complete microchannel is formed by capping the open channel with the PCL-coated polymer. After the individual layers have been assembled, complete bonding is carried out in a thermal press (Fred S. Carver Inc., Summit, NJ) with minimal pressure (100 psi or less) at 60°C. A schematic of the fabrication process is presented in Fig. 1. (-----From Myra's unpublished paper)



**Fig. 1** Microchip fabrication using PCL as capping materials. PMMA microchannels were produced via hot embossing. Next, inlets and outlets were drilled on the PMMA chip. PCL is coated (green) on one side of a PMMA piece, and positioned facing the embossed channel. The assembly was heated and pressed at ~60°C to achieve complete bonding. (-----From Myra's unpublished paper)

**Step 1:** Prepare 3% (m/v) polycaprolactone in chloroform. (Overnight)

**Step 2:** Spin-coat PCL-chloroform solution onto silica wafers (about 10-15 ml per each silica wafer) and air dry them in the hood.

Spin-Coating Program: 200 rpm for 10 seconds  
500 rpm for 20 seconds  
2000 rpm for 15 seconds  
0 rpm for 10 seconds

**Step 3:** transfer PCL film (about 100 micrometer thick) onto one side of your top-layer of polymer: (60 °C; 600 psi; use a sponge on top to balance the pressure)

**Step 4:** Bonding (60 °C; 100 psi; also use a sponge on top to balance the pressure)