

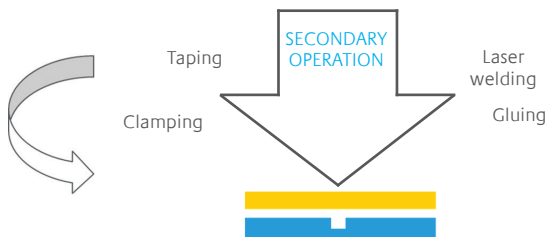
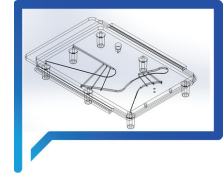
INNOVATIVE PROCESS FOR EFFICIENT MANUFACTURING OF MICROFLUIDIC CARTRIDGES

DRIVERS

- Expected growth in point-of care diagnostics and need for intricate microfluidic cartridges
- Current cartridge manufacturing process is complex, involving secondary operations

OBJECTIVE

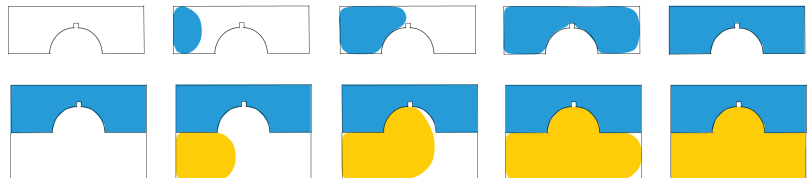
Enable a cost-effective, efficient cartridge manufacturing process using innovative processing techniques



PROCESS

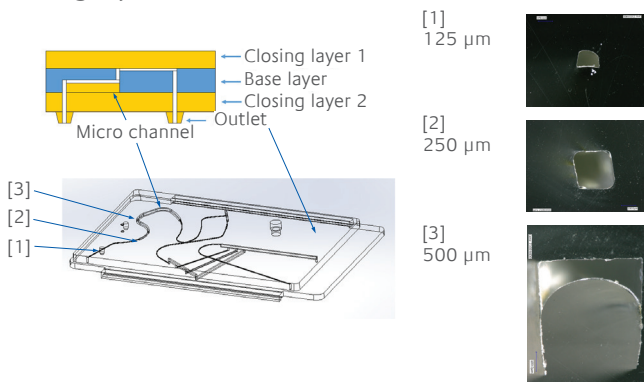
Create micro channels in a polymer substrate, using hesitation during multi-step injection molding process:

1. Base layer with half-open micro channel and geometry
2. Overmolding base layer to create a sub-surface, closed-off microchannel



RESULTS

Results for 125, 250 and 500 μm (width) micro channel with orientation perpendicular to closing layer filling orientation, varying aspect ratio between width of micro channel and thickness of closing layer



CONCLUSIONS

- Efficient molding technology to manufacture microfluidic cartridges eliminates secondary operations
- Aspect ratio is important, but ultimately the ingress of closing layer material in the channel will occur if channel size exceeds 500 μm in current design
- The process of hesitation is material independent, however stable process control with higher flowing materials may present challenges

SABIC IS EXPLORING COLLABORATION OPPORTUNITIES

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