

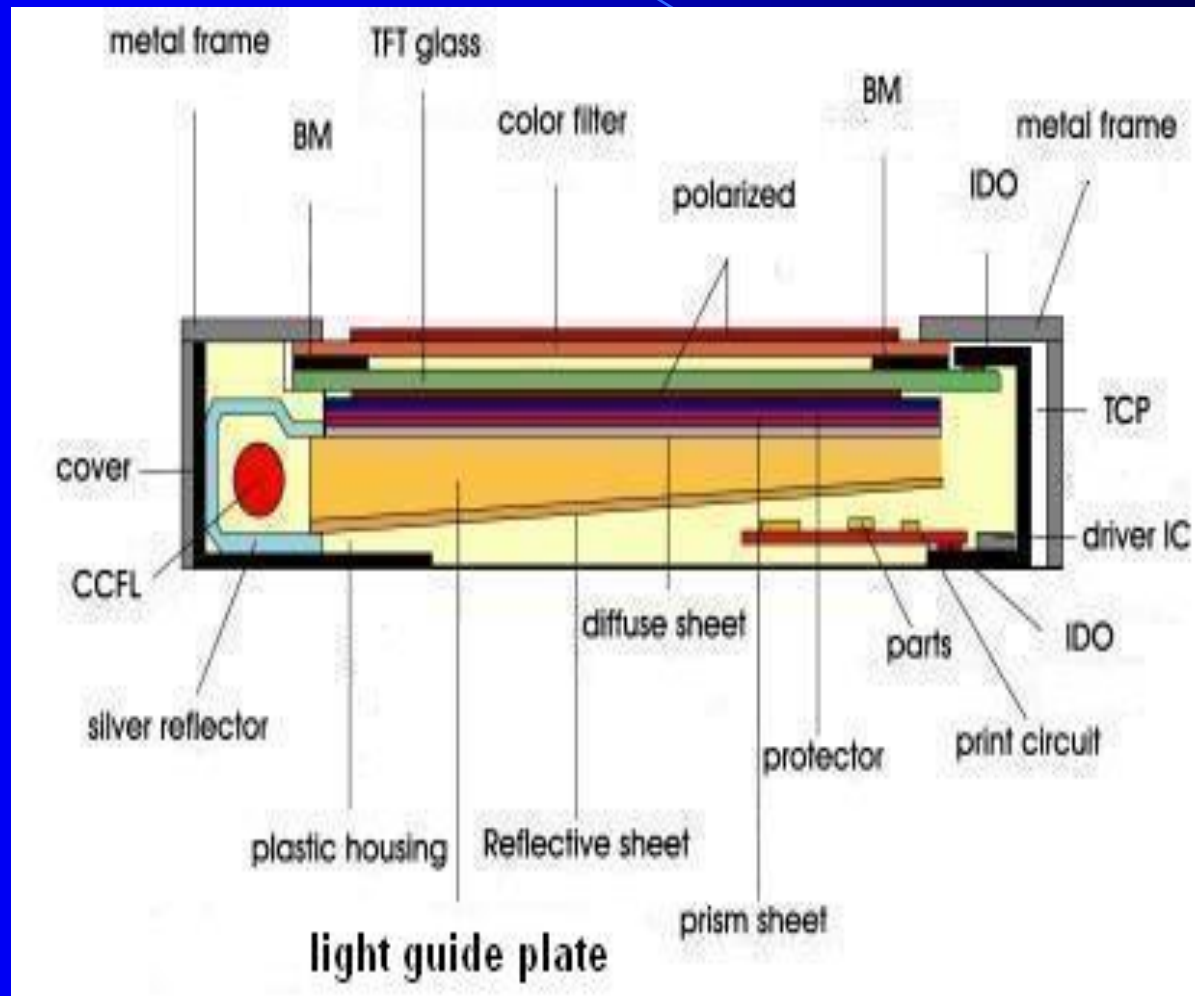
The Precision Injection and Variable-Distance Injection Compression Molding of Wedge-Shape Plate

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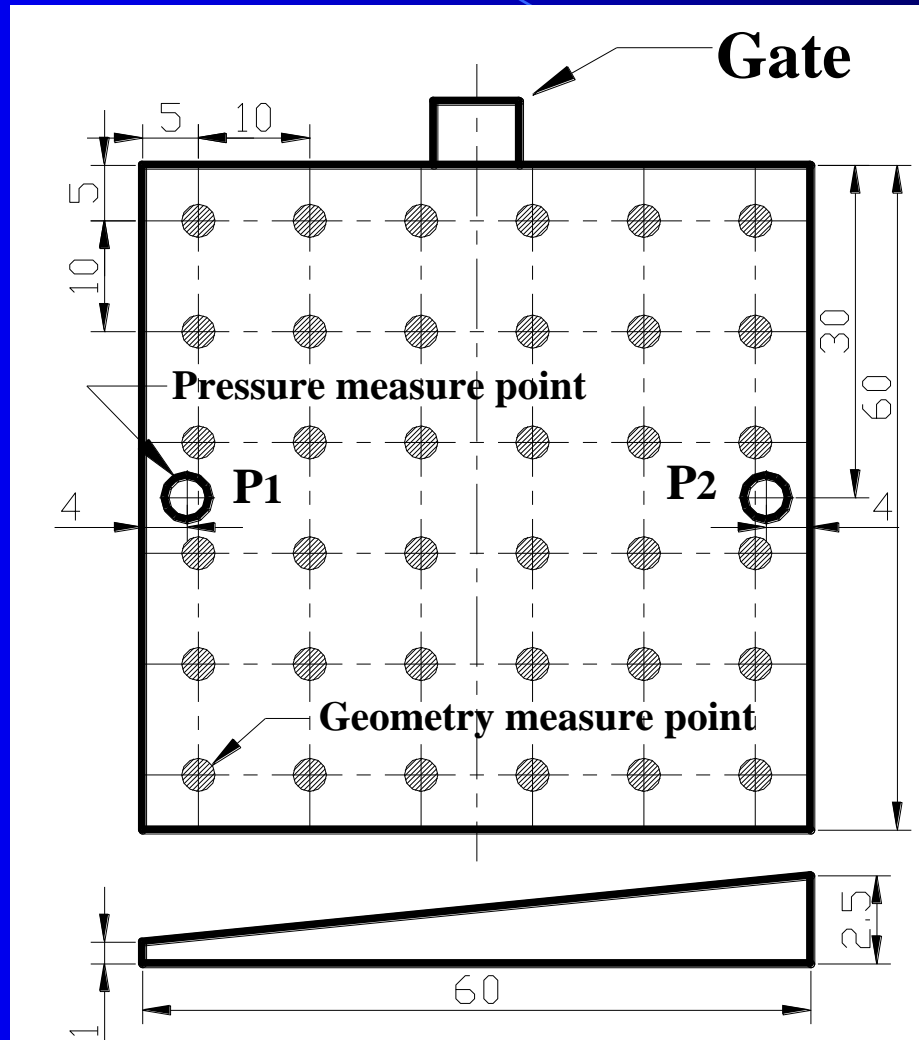
Outline

- Introduction
- The Injection Compression Molding (ICM) and Variable-Distance Injection Compression Molding (VICM)
- Mold design and operating parameters
- The pressure histories of IM, ICM and VICM
- The effects of individual parameters on the flatness
- Conclusions

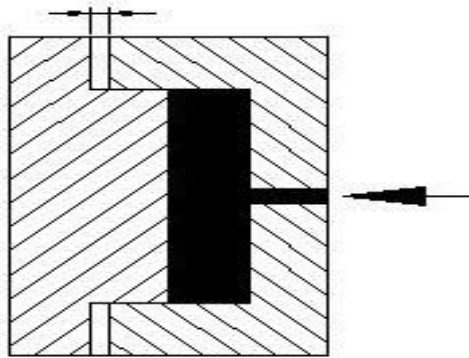
The Light Panels in Potable Display Modules



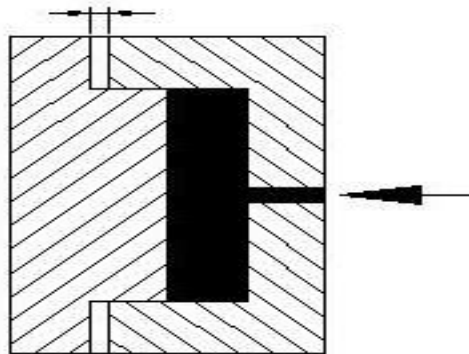
The Geometry and the Data Measured Point of the Wedge-Shape Plate



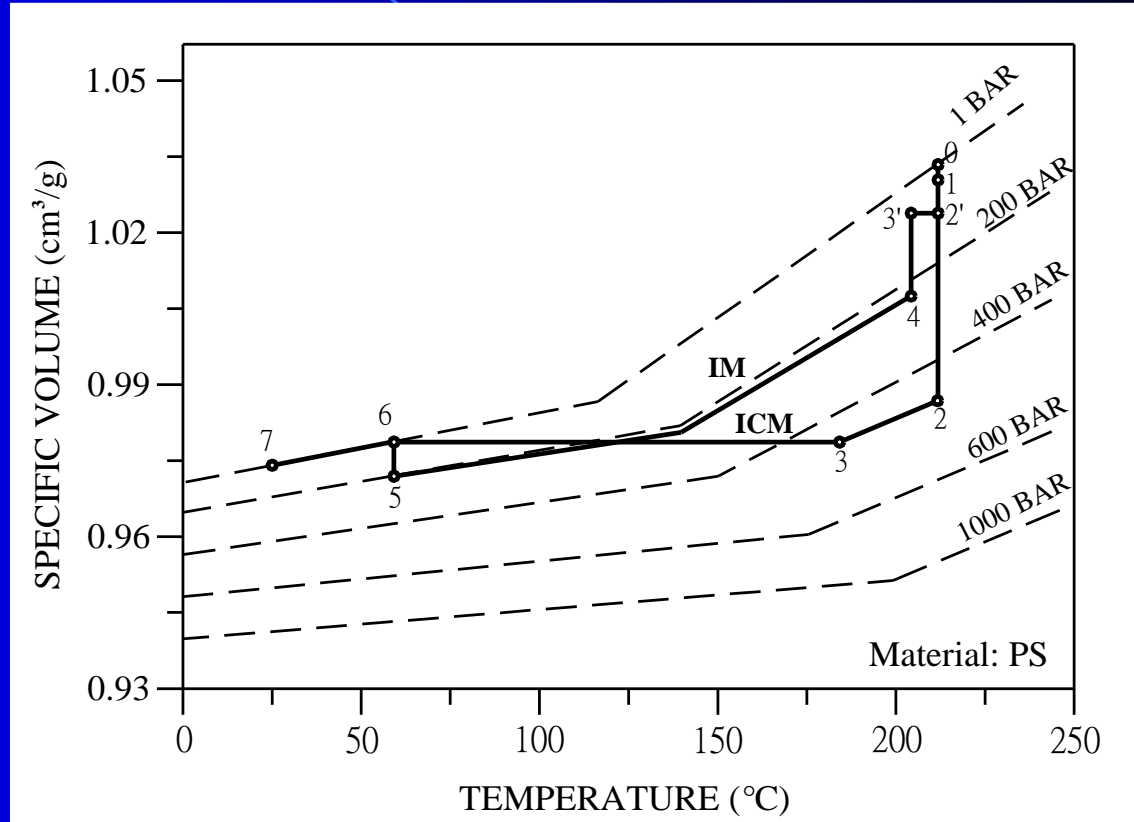
The IM and ICM Processes in P-V-T Diagram



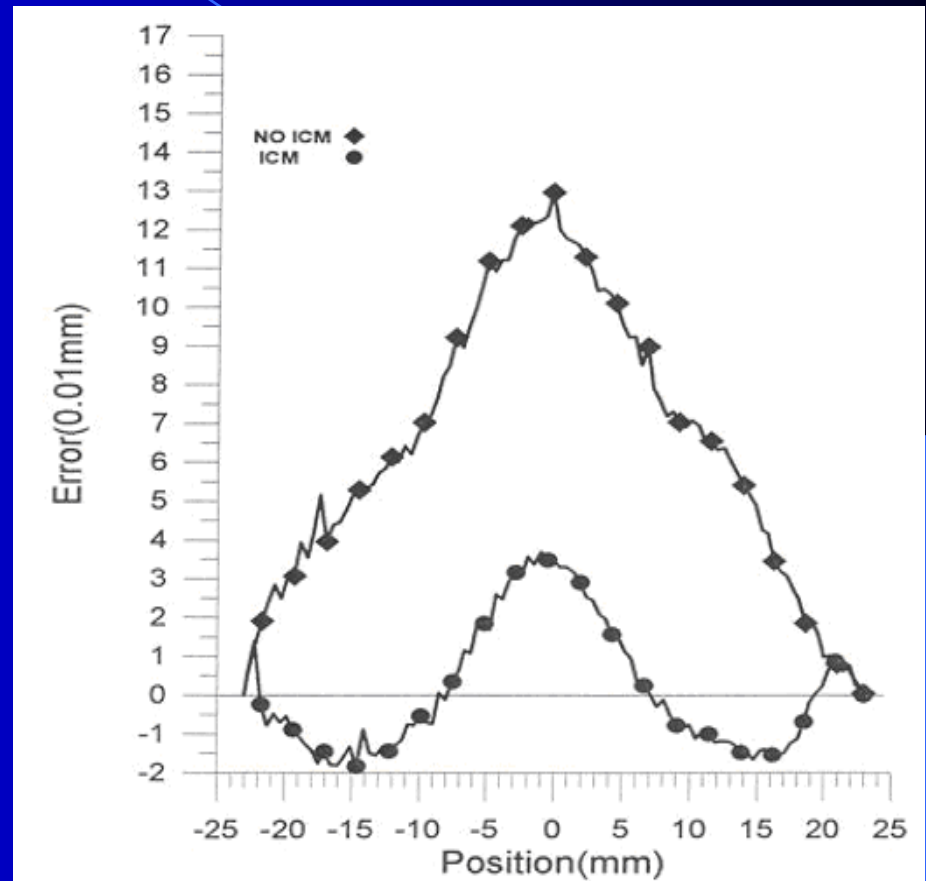
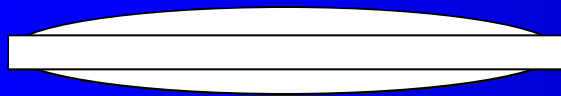
filling



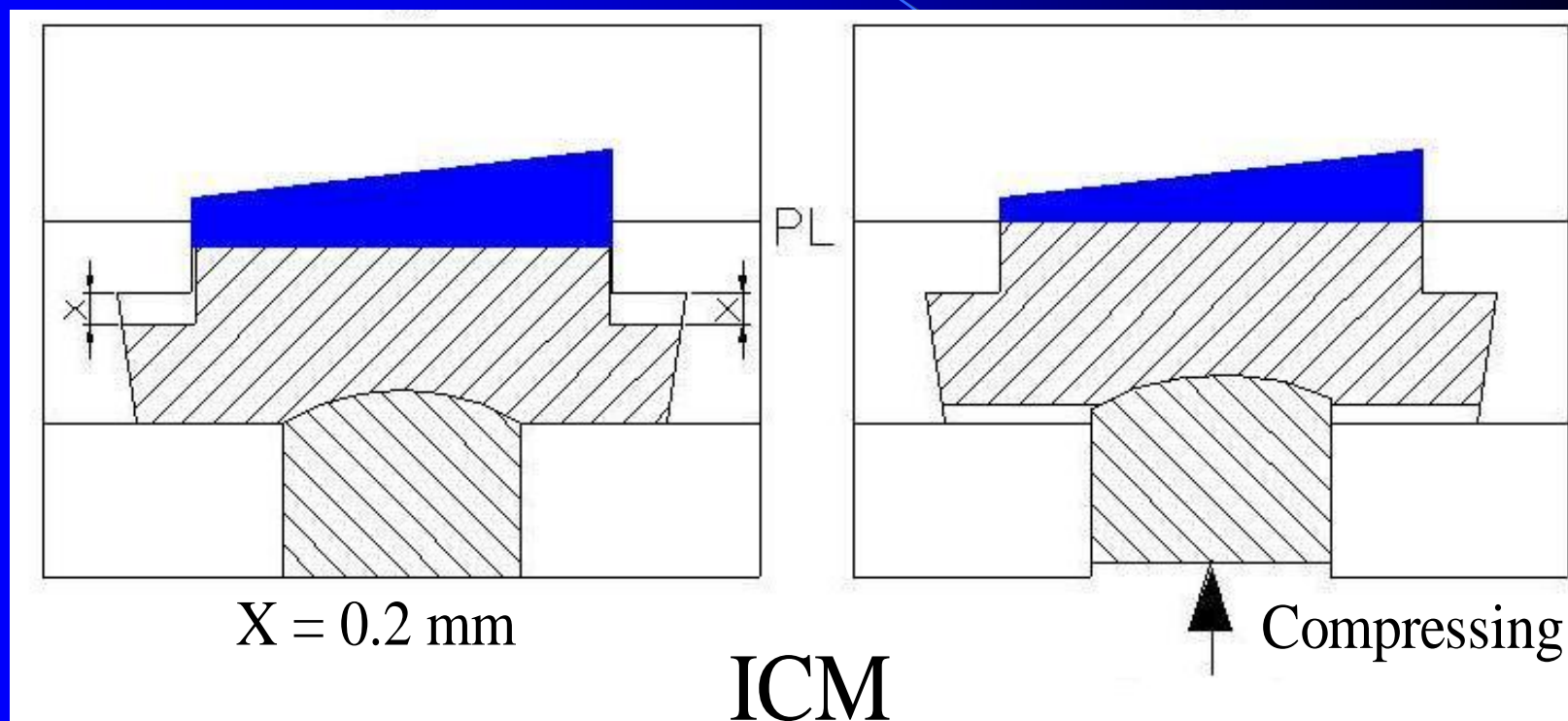
compression



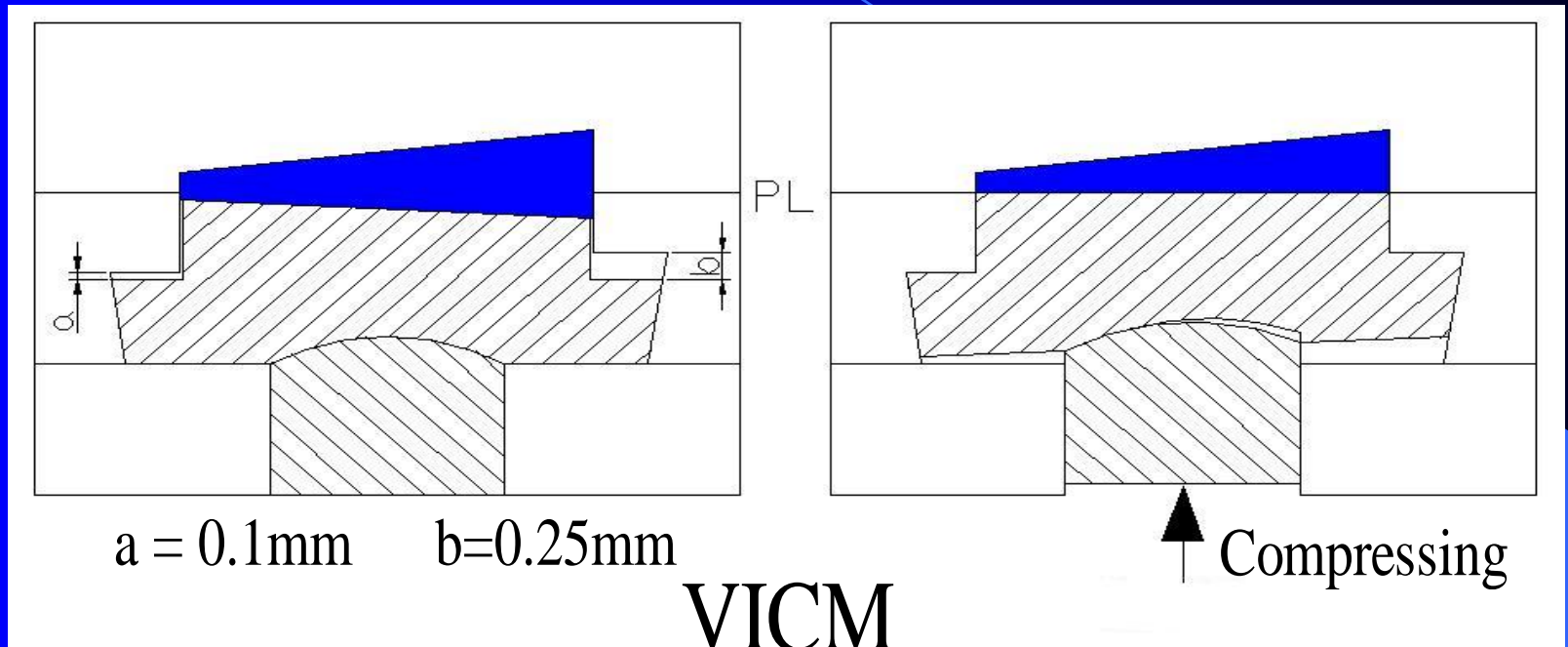
The Comparison of Surface Contour Molded With and Without Compression



The Compression Construction of ICM

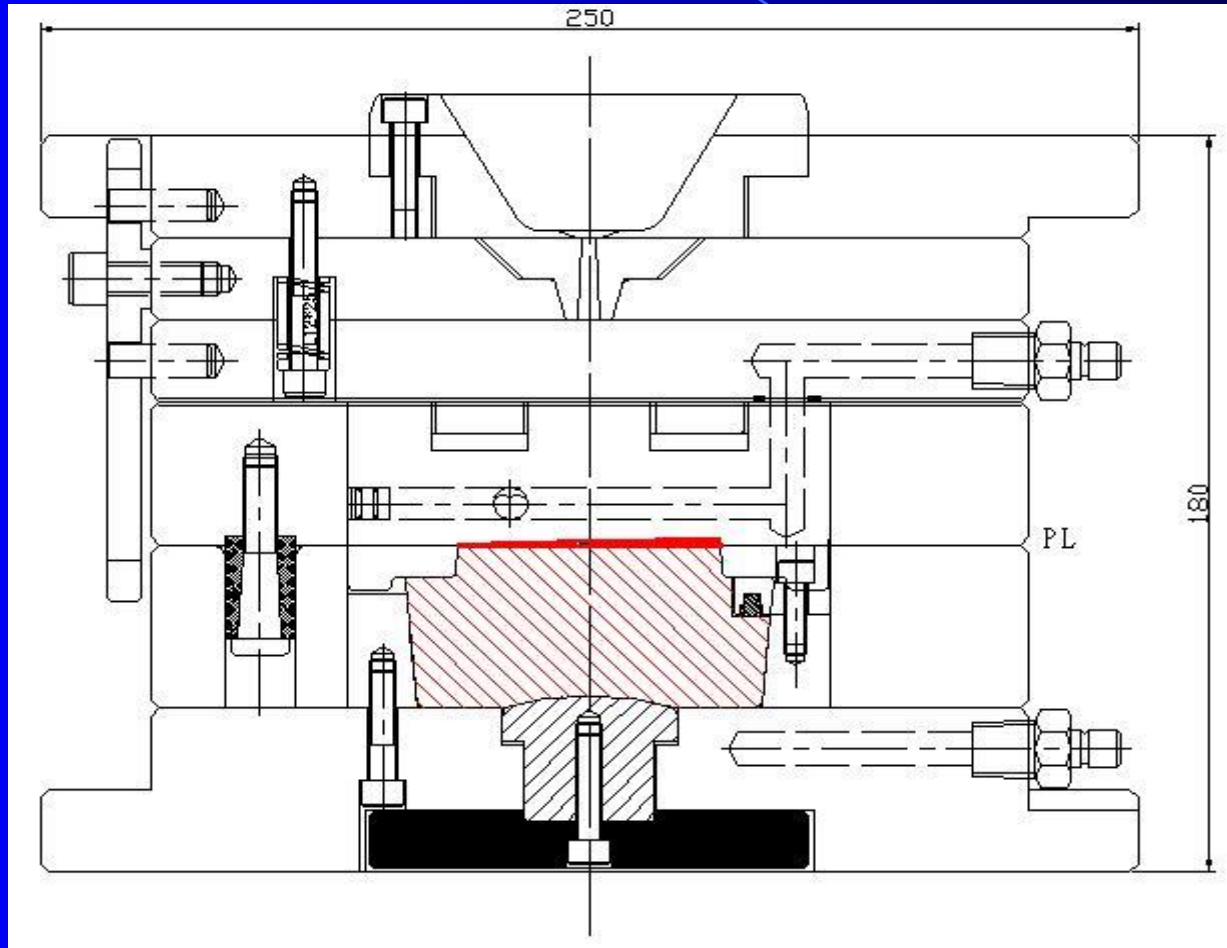


The Compression Construction of VICM



VICM

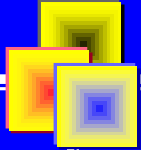
The Construction of the Mold for Wedge-Shape Plate Parts



The Design of Individual Parameters on the IM Process

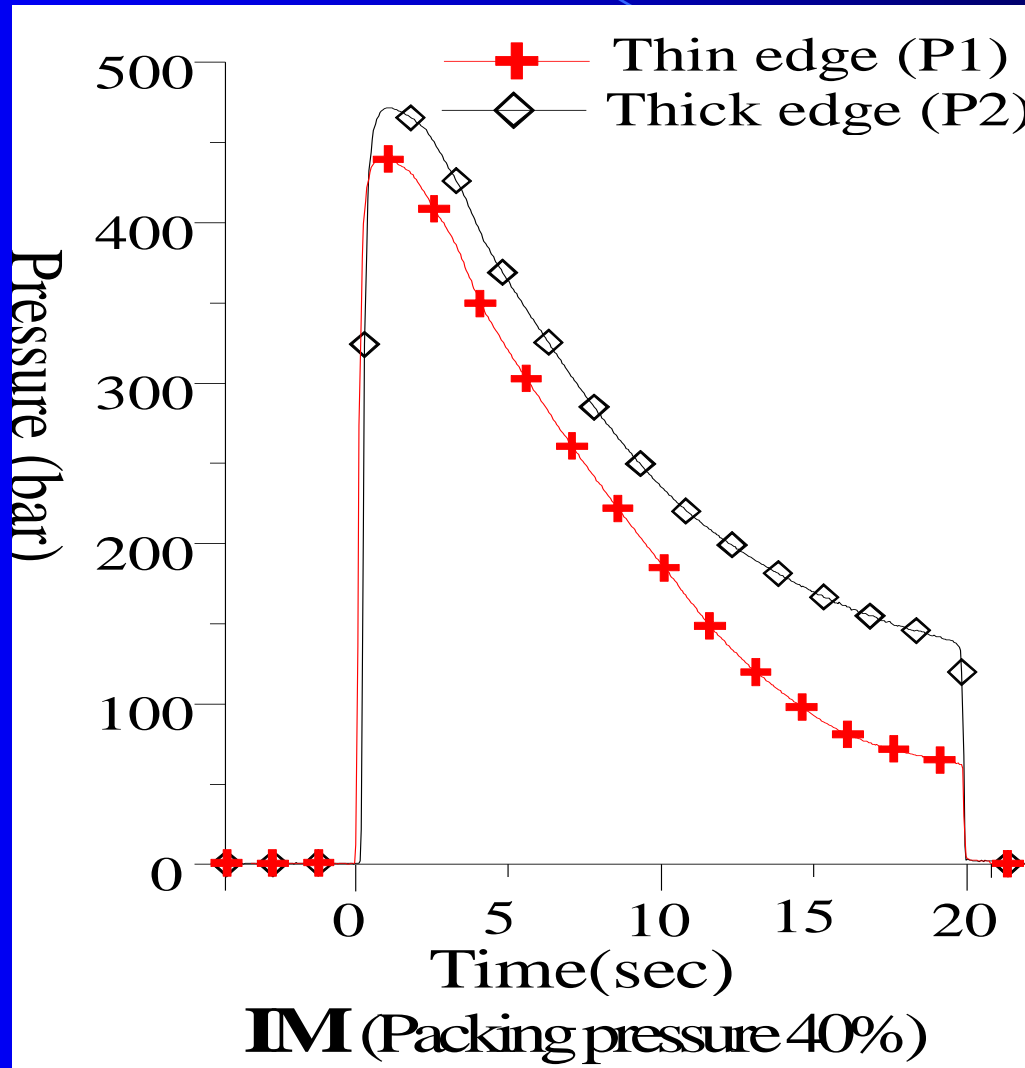
Parameters	Packing Pressure	Packing Time	Mold Temp.	Melt Temp.
1	10 %	1.0 sec	40 °C	210 °C
2	20 %	2.0 sec	50 °C	230 °C
3	30 %	4.0 sec	60 °C	250 °C
4	40 %	6.0 sec	80 °C	
5		8.0 sec		

The Design of Individual Parameters on the ICM and VICM Process



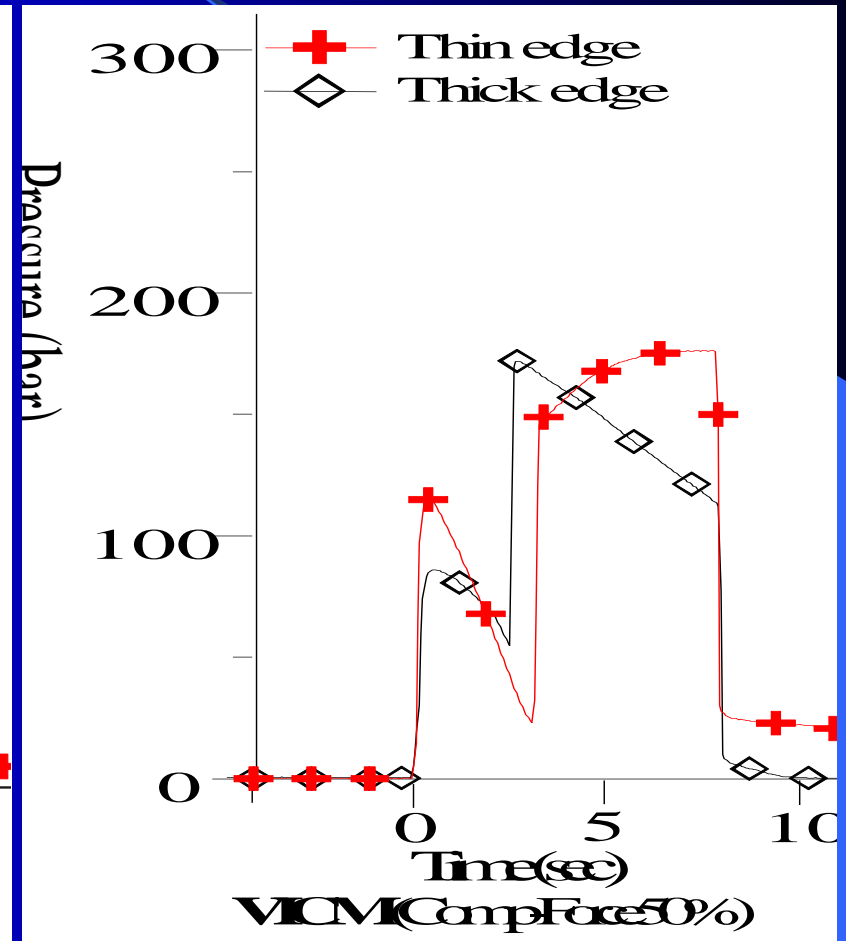
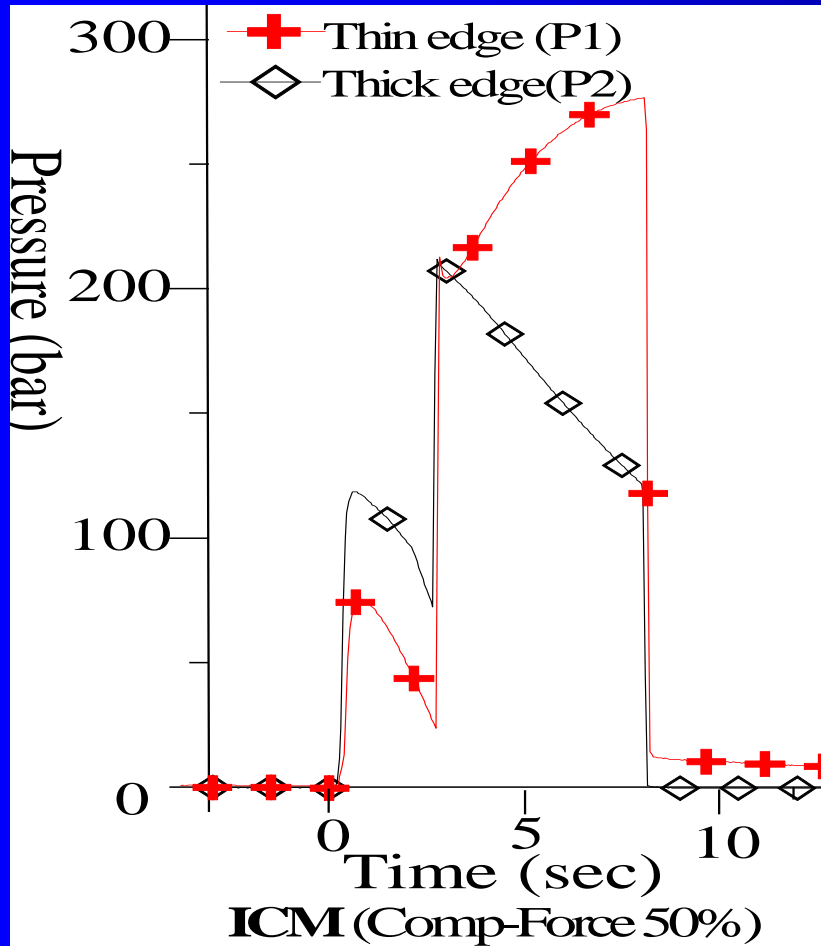
Parameters	Compressing Pressure	compressing Time	Mold Temp.	Melt Temp.
1	10 %	1.0 sec	40 °C	210 °C
2	30 %	2.0 sec	60 °C	230 °C
3	50 %	4.0 sec	80 °C	250 °C
4	70 %	6.0 sec		
5	90 %	8.0 sec		

The Pressure History of IM Process



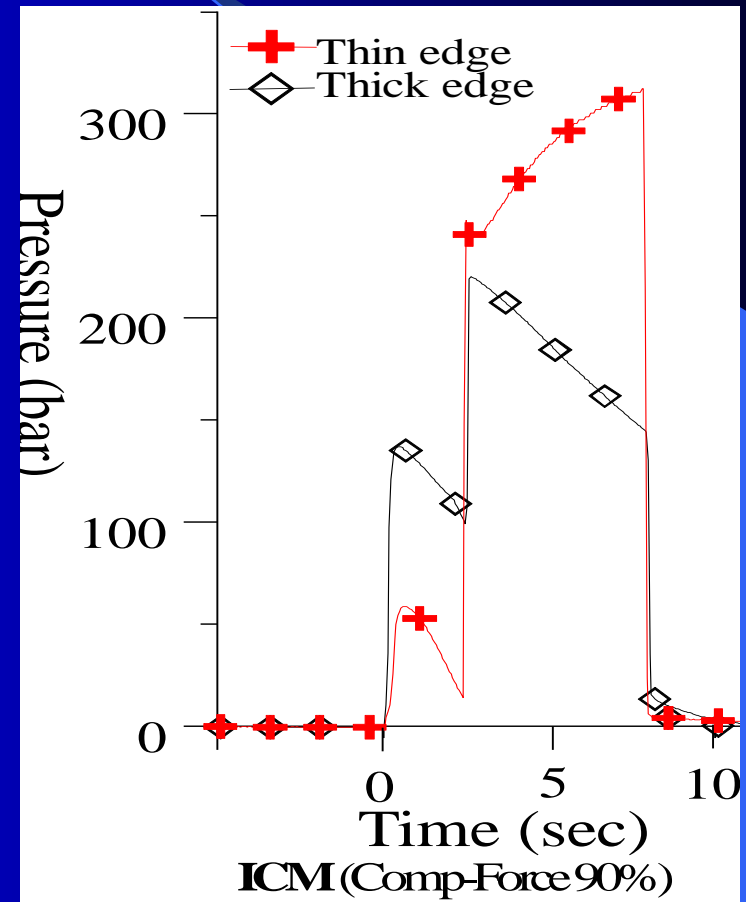
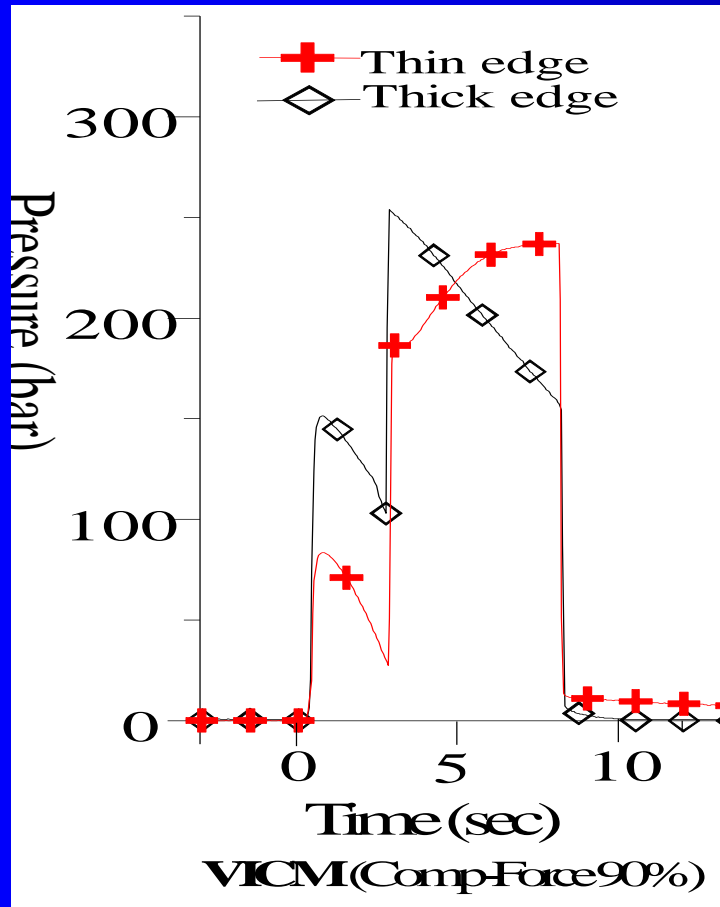
The Pressure History of ICM and VICM ^{1/2}

➤ With 50% compressing force

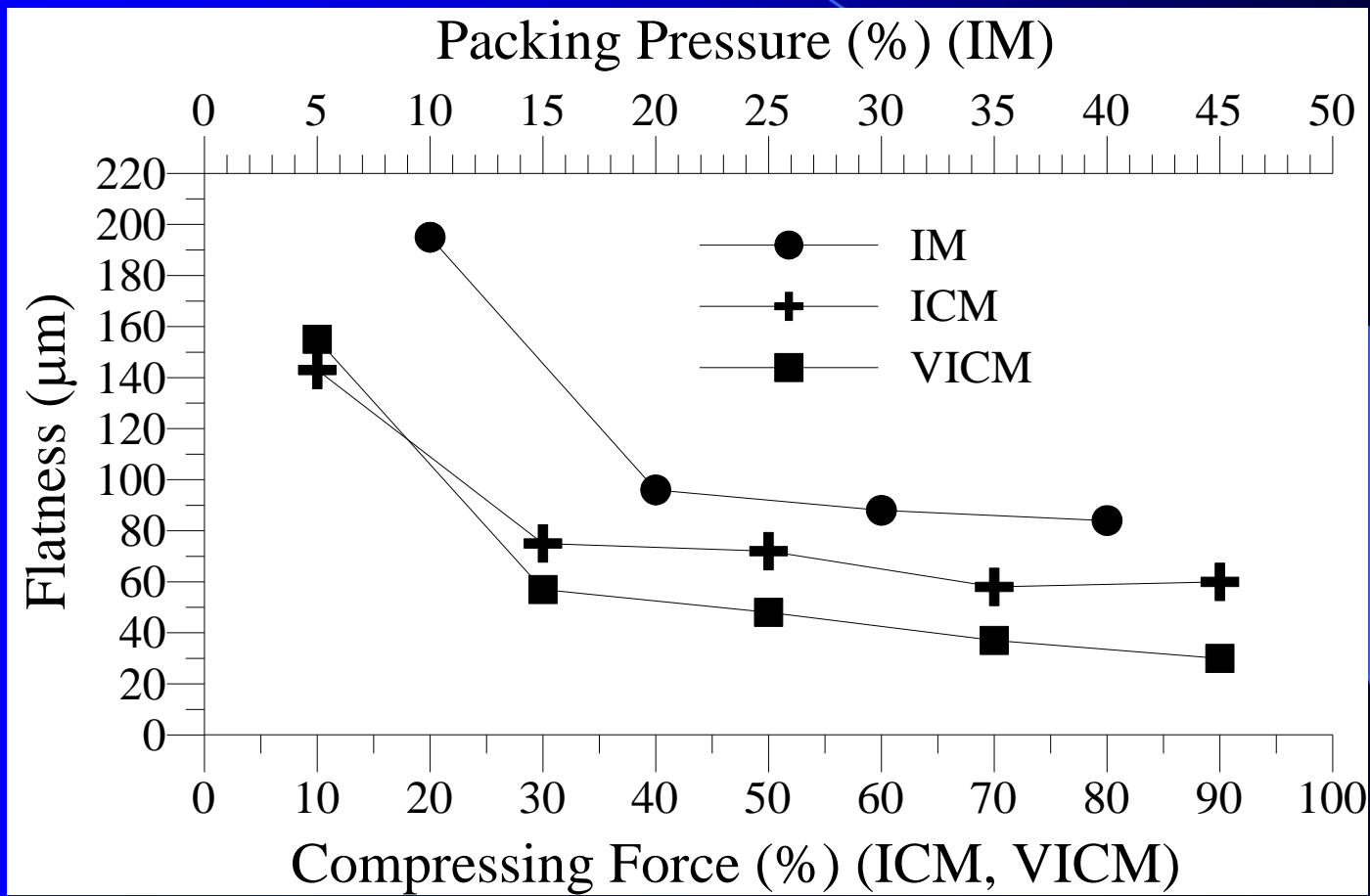


The Pressure History of ICM and VICM ^{2/2}

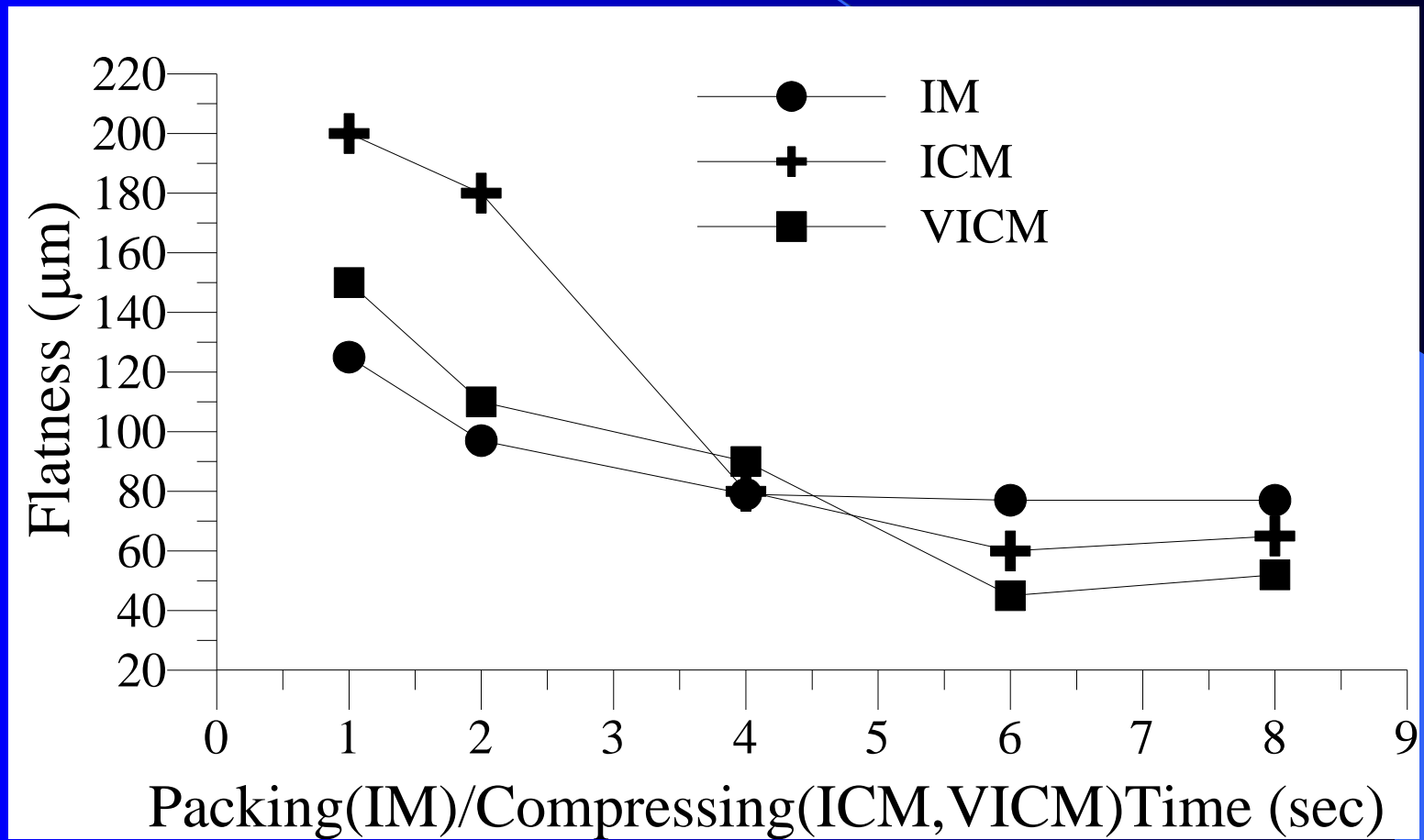
➤ With 90% compressing force



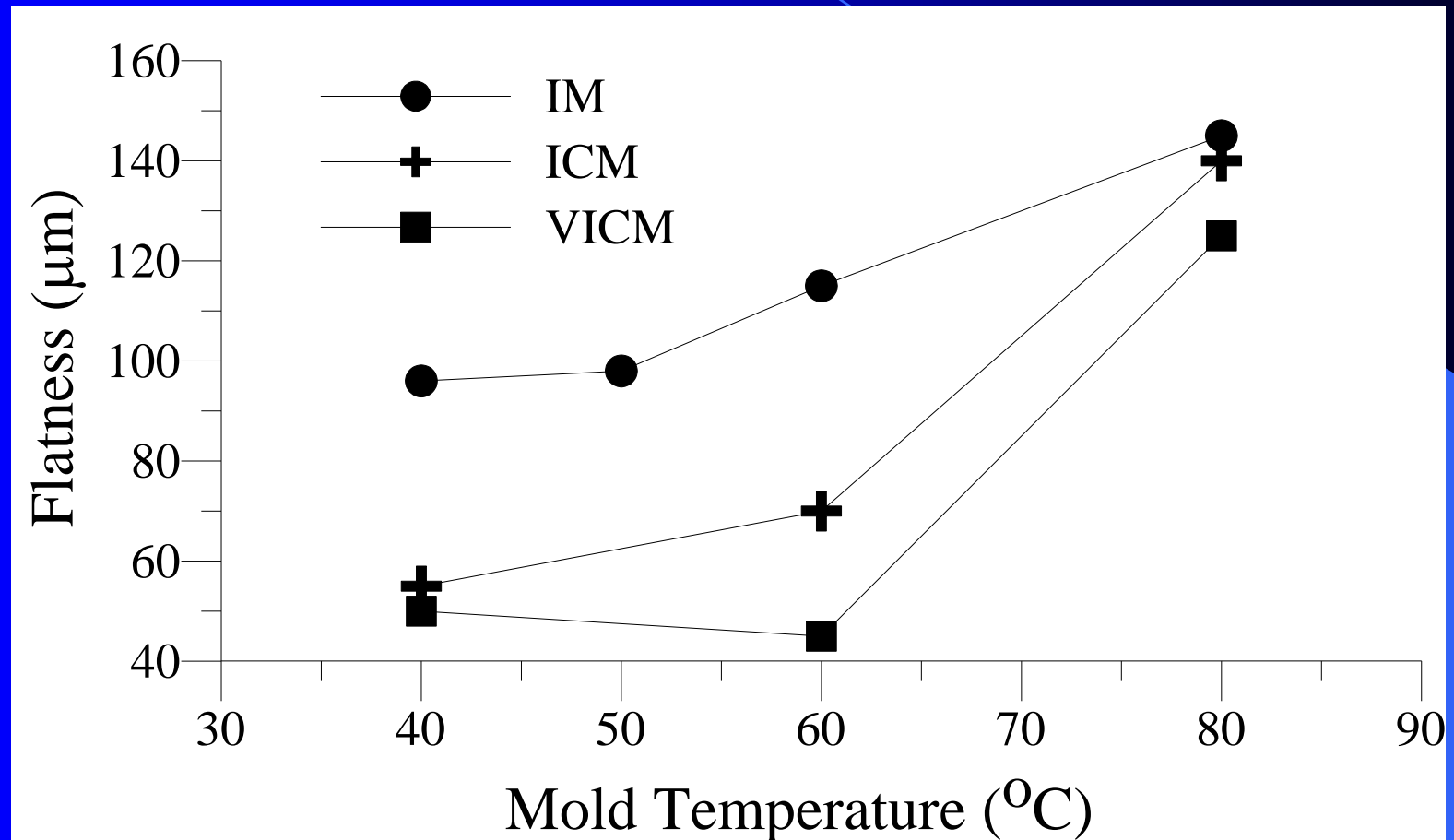
The Effects of Packing Pressure / Compressing Force on the Flatness



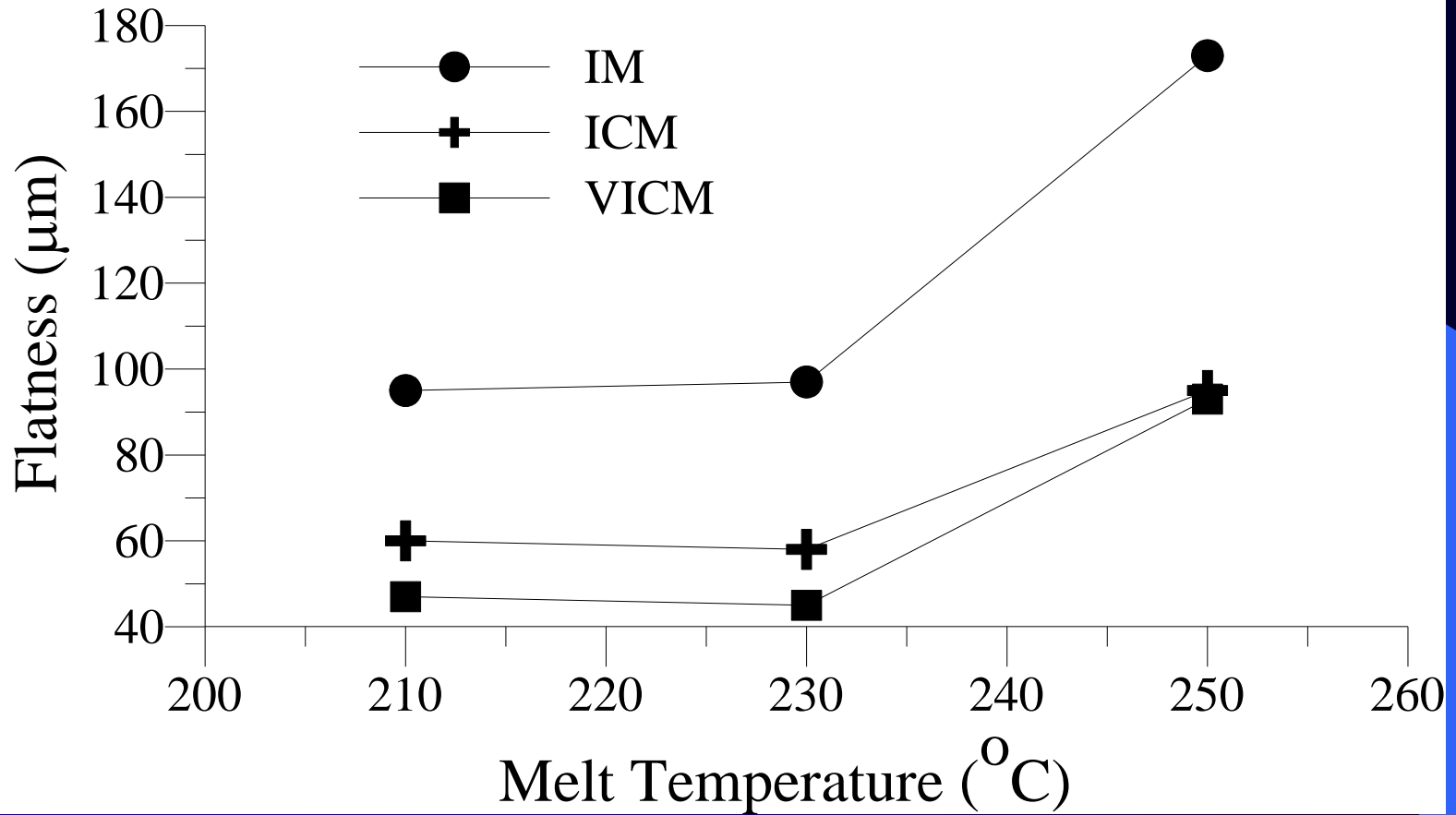
The Effects of Packing Pressure / Compressing Time on the Flatness



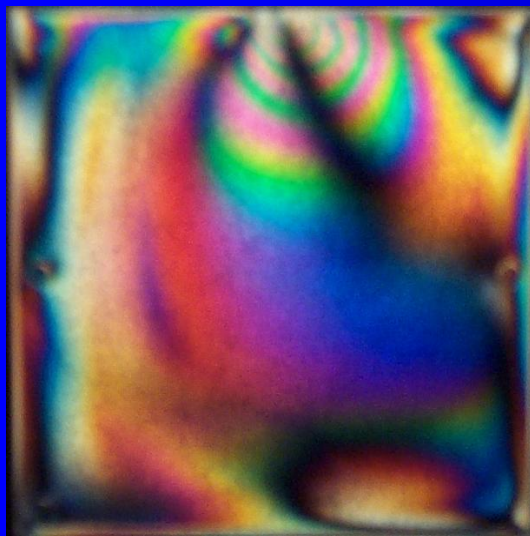
The Effects of Mold Temperature on the Flatness



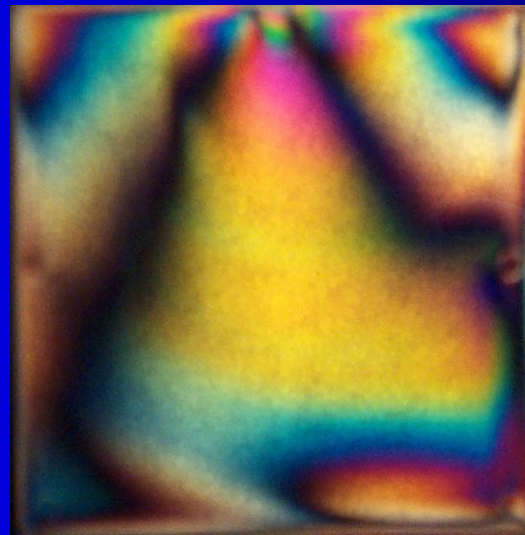
The Effects of Melt Temperature on the Flatness



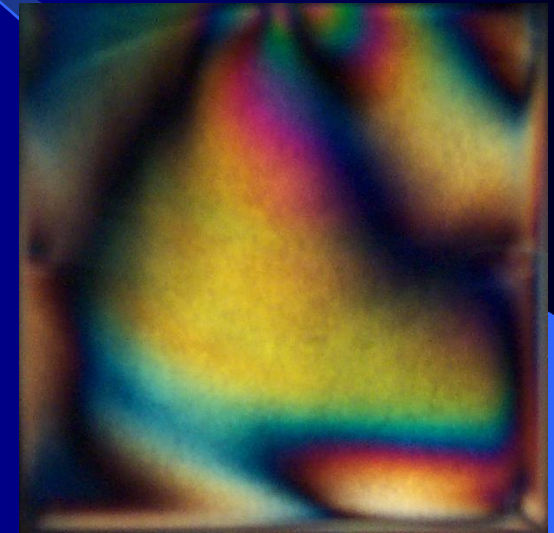
Birefringence Patterns of Three Wedge-Shape Plates Molded



IM



ICM



VICM

Conclusions ^{1/2}

- Compression process could significantly increase the flatness property and decrease the birefringence.
- the VICM process has the best flatness and least birefringence.
- The VICM has more uniform pressure distribution than ICM in the compression process.
- The increase of packing pressure / compressing force and time could result in better flatness.

Conclusions ^{2/2}

- The lower mold temperature has better flatness in IM and ICM parts.
- The VICM has the best flatness at mold temperature of 60 °C.
- The high melt temperature will decrease the quality of flatness in all of the three processes.
- The IM parts have the much larger birefringence than ICM and VICM parts
- The ICM and VICM have similar birefringence patterns, but the VICM part have a little bit less birefringence than the VICM part.

Thank You !

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