

Title:	The effects of hot pressing on the swelling behavior of P(MMA-co-NVP) hydrogel discs
Type:	Article indexed in ISI/Web of Knowledge Database
Source (ISSN):	POLYMER ENGINEERING AND SCIENCE (0032-3888)
Status:	A paid open access option is available for this journal.
Author:	Smith J, Radzi Z, Czernuszka J
Volume (Issue):	55(6):1290-1295
DOI:	10.1002/pen.24067
Abstract:	<p>Compression of dehydrated P(MMA-co-NVP) hydrogel at the glass transition temperature (161 degrees C) results in discs which exhibit orthotropic expansion when hydrated in water. It has been found that the expansion is nonuniform, with an outer annulus expanding more rapidly than the inner core. This behavior has been investigated by comparing the crosspolarized light microscopy, swelling response, and hardness tests for discs pressed with a lower friction (PTFE) interface and those pressed with a higher friction interface (aluminum). Only in the latter case was a clear boundary observed. The outer 4 mm of a 13 mm disc showed increased radial chain alignment as compared to the inner core, as well as a lower average hardness value (81.7HK compared to 97.7HK). These results were not observed in samples pressed with a PTFE interface. This behavior has subsequently been modeled using axisymmetric loading and assuming Von Mises Criteria,</p>

	showing that the change in behavior can be explained by the presence of a stick-slip boundary formed during hot pressing. POLYM. ENG. SCI., 55:1290-1295, 2015.
Keyword:	IN-VIVO; TISSUE; COMPRESSION; FRICTION
Related URL:	http://onlinelibrary.wiley.com/doi/10.1002/pen.24067/abstract