# Interpenetrating Network Hydrogels and their Photochemical Modification

An interdisciplinary team of Stanford University researchers have developed a novel interpenetrating polymer network hydrogel that is useful for a wide variety of medical, industrial and personal hygiene applications. The material is simultaneously mechanically strong, biocompatible, and highly water-absorbent. In addition, surface modifications can be used to attach biomolecules to the hydrogel.

### Applications

• Ophthalmic Implants

#### Advantages

- Mechanically strong high tensile and compressive strength
- Low coefficient of friction high surface lubricity
- Hydrophilic:
  - $\circ~60$  90% water content
  - high swellability
- High permeability
- Optical transparency
- Biocompatibility

#### **Publications**

• Tan XW et al. <u>In vivo biocompatibility of two PEG/PAA interpenetrating polymer</u> <u>networks as corneal inlays following deep stromal pocket implantation</u>. *J Mater Sci Mater Med* 2013 Apr; 24(4):967-977.  Myung D, Koh W, Bakri A, Zhang F, Marshall A, Ko J, Noolandi J, Carrasco M, Cochran JR, Frank CW, Ta CN, <u>"Design and fabrication of an artificial cornea</u> <u>based on a photolithographically patterned hydrogel construct."</u> *Biomed Microdevices* 2007 Jan 20.

#### Patents

- Published Application: 20080269370
- Issued: <u>8,821,583 (USA)</u>

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