

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:**
 - 60 - 90% water content
 - high swellability
- **High permeability**
- **Optical transparency**
- **Biocompatibility**

Publications

- Tan XW et al. [In vivo biocompatibility of two PEG/PAA interpenetrating polymer networks as corneal inlays following deep stromal pocket implantation.](#) *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, "[Design and fabrication of an artificial cornea based on a photolithographically patterned hydrogel construct.](#)" *Biomed Microdevices* 2007 Jan 20.

Patents

- Published Application: [20080269370](#)
- Issued: [8,821,583 \(USA\)](#)

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