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**Manuscript Type:** ORIGINAL ARTICLE

### *Observational Study*

**Experimental Model Standardizing Polyvinyl Alcohol Hydrogel to Simulate Endoscopic Ultrasound and EUS-Elastography**

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### **Abstract**

#### BACKGROUND

Endoscopic Ultrasound (EUS) and Endoscopic Ultrasound Elastography (EUS-E) simulation lessens the learning curve; however models lack realism, diminishing competitiveness.

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## Characterization of polyvinyl alcohol hydrogels as tissue ...

<https://www.sciencedirect.com/science/article/pii/S0021929019307791>

Before compression test, **hydrogel** samples were molded to be cylindrical with the dimension of 20 × 20 × 6 mm (Meng et al., 2017). A pressure test was carried out at a speed of 0.5 mm/s under a 10-ramp as shown in Fig. 1, while in each ramp, samples were displaced around 0.18 mm and was then restarted. Therefore, 10 compressive displacement ramps applied to the 30% strain as shown in ...

**Author:** Mohadeseh Nazouri, Mohadeseh Na... **Publish Year:** 2020

## Experimental and numerical tribological studies of a ...

<https://www.ncbi.nlm.nih.gov/pubmed/22947923>

**Experimental** and numerical tribological studies of a boundary lubricant functionalized poro-viscoelastic PVA **hydrogel** in normal contact and sliding. Blum MM(1), Ovaert TC. Author information: (1)Department of Aerospace and Mechanical Engineering, University of Notre Dame, Notre Dame, IN, USA.

**Cited by:** 19 **Author:** Michelle M. Blum, Timothy C. Ovaert

**Publish Year:** 2012

## Molecular dynamic simulation on the state of water in Poly ...

[https://www.researchgate.net/publication/312080294\\_Molecular\\_dynamic\\_simulation\\_on\\_the...](https://www.researchgate.net/publication/312080294_Molecular_dynamic_simulation_on_the...)

A **hydrogel** intervertebral disc (IVD) **model** consisting of an inner nucleus core and an outer annulus ring was manufactured from 30 and 35% by weight Poly(vinyl **alcohol**) **hydrogel** (PVA-H ...

## Experimental and numerical tribological studies of a ...

<https://www.sciencedirect.com/science/article/pii/S1751616112001750>

The three solid material parameters input into the **model** are the elastic modulus (E) in units of MPa, viscosity ( $\eta$ ) in units of MPa s, and Poisson's ratio ( $\nu$ ). The viscosity value was assumed to be  $\eta=0.1$  MPa s based on the previous work (Liu et al., 2009). Poisson's ratio of a PVA **hydrogel** varies in the





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## [AN OVERVIEW OF ELASTOGRAPHY – AN EMERGING ...](#)

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3269947>

Fromageau J, Gennisson JL, Schmitt C, Maurice RL, Mongrain R, Cloutier G. Estimation of **polyvinyl alcohol** cryogel mechanical properties with four **ultrasound** elastography methods and comparison with gold **standard** testings. IEEE Trans Ultrason Ferroelectr Freq Control. 2007; 54:498–509.

**Cited by:** 304

**Author:** Armen Sarvazyan, Timothy J. Hall, Matth...

**Publish Year:** 2011

## [US9179997B2 - Thermochromic polyvinyl alcohol based ...](#)

<https://patents.google.com/patent/US9179997> ▾

A method of creating a thermochromic artificial blood vessel includes physically cross-linking a **polyvinyl alcohol** solution in a mold shaped to mimic a blood vessel **to create** an artificial blood vessel. The artificial tissue is then chemically cross-linked with a solution including a chemical cross-linking reagent. A coagulation solution is then applied to the artificial blood vessel to both ...



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A method of creating a thermochromic artificial blood vessel includes physically cross-linking a **polyvinyl alcohol** solution in a mold shaped to mimic a blood vessel **to create** an artificial blood vessel. The artificial tissue is then chemically cross-linked with a solution including a chemical cross-linking reagent. A coagulation solution is then applied to the artificial blood vessel to both ...

**Author:** Eunhee Cho, Valentine Kozov, Sukan... **Publish Year:** 2013

## Self-expandable hydrogel biliary stent design utilizing ...

<https://www.researchgate.net/publication/338190433...>

Dec 29, 2019 · **Endoscopic ultrasonography**-guided biliary drainage (**EUS**-BD) has been carried out as an alternative to the percutaneous or surgical approach when **endoscopic** retrograde cholangiopancreatography fails.

## Poly(vinyl alcohol) gels for use as tissue phantoms in ...

<https://www.researchgate.net/publication/10880421...>

Here, in our combined **experimental** and numerical study we consider **polyvinyl alcohol** based **hydrogel** (PVA-H) phantoms [28, 29]. Albeit the preparation procedure of the PVA-H phantoms is rather ...

## Tissue mimicking materials for ultrasound phantoms ...

<https://aapm.onlinelibrary.wiley.com/doi/abs/10.1118/1.594483>

Madison Odom, Jonathan R. Gomez, Kerry Ann Danelson, Aarti Sarwal, Development of a Homemade Spinal **Model** for **Simulation** to Teach **Ultrasound** Guidance for Lumbar Puncture, Neurocritical Care, 10.1007/s12028-019-00779-4, (2019).

**Cited by:** 424 **Author:** Ernest L. Madsen, James A. Zagzebski, ...  
**Publish Year:** 1978

## A longitudinal feasibility study on AAA growth vs ...

<https://www.researchgate.net/publication/285804219...>

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