Investigating the Effects of pH on Hydrogel Friction

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Contacts disrupt low-friction biological environments
Synthetic hydrogels can replicate low-friction interfaces
pH levels can tune the friction and swelling of hydrogels
Acrylic acid enables pH to affect these properties
One sample stands out in terms of water content

![Swelling Ratio Chart]

- pH = 1.92
- pH = 7
- pH = 10.18

Swelling Ratio

0wt% Acrylic Acid

12wt% Acrylic Acid
Trend between the friction and presence of Acrylic Acid

\[ \mu \text{ (coefficient of friction)} \]

- pH = 1.92
- pH = 7
- pH = 10.18

Ice on Ice

0 wt% Acrylic Acid

12 wt% Acrylic Acid
Acrylic acid and more basic solutions cause low friction

Ice on Ice: $\mu = 0.02$

Our Samples: $\mu = 0.003$
Biomedical devices can benefit from understanding hydrogels
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Thank you for listening!

Are there any questions?