

Inventing materials that absorb impacts

Hyogo Prefectural Kobe High School Science Course
Hiroki Fukada Takayuki Aramaki Yuta Ogino

Purpose

- Find the ratio for how much solute to mix to absorb the most impact.



- Make Gel that can absorb impact (quoted the ratio)

: Motive :

Because we are interested in this phenomenon we think we can turn it into new materials

● Experiment1

: Find the ratio :

What we used

- Fragmented Silica
- Beaker
- Voltex Mixer

• Procedure

- Pour water into fragmented silica.
- Stir ① with vibration of voltex mixer.
- Observe ②

Water	Appearance
5ml	Can't be mixed
10ml	Getting so hard
15ml	Getting less hard than 10ml's one
20ml	Not hard
25ml	Not hard

Result

We found the ratio.

Solute:Water=10:2

For EX2, we use PVA starch instead of water.



● Experiment 2

: Changing liquids into Gel :

- What we used
- Solution from EX1
- PVA starch
- Borax
- Hot water

• Procedure

- Pour PVA starch into fragmented silica while stirring carefully.
- Pour hot water mixed borax into PVA starch.
- Stir it till it got hard.
- Observe ③

Result

We experimented with each ratio, but we couldn't make gel that can absorb an impact.

Result and Study

In these experiments, We found the ratio:

Solute:Water=10:2

But we can't make gels that absorb impacts.

Particle spreading in solute, this phenomenon happens. so we will keep particles being apart in Gels for next experiment

Points for improvement

In these experiment, we couldn't stir the solution as we think. And we didn't illustrate how hard gel got.

Quoted Data:D3O gel, D3O technology.