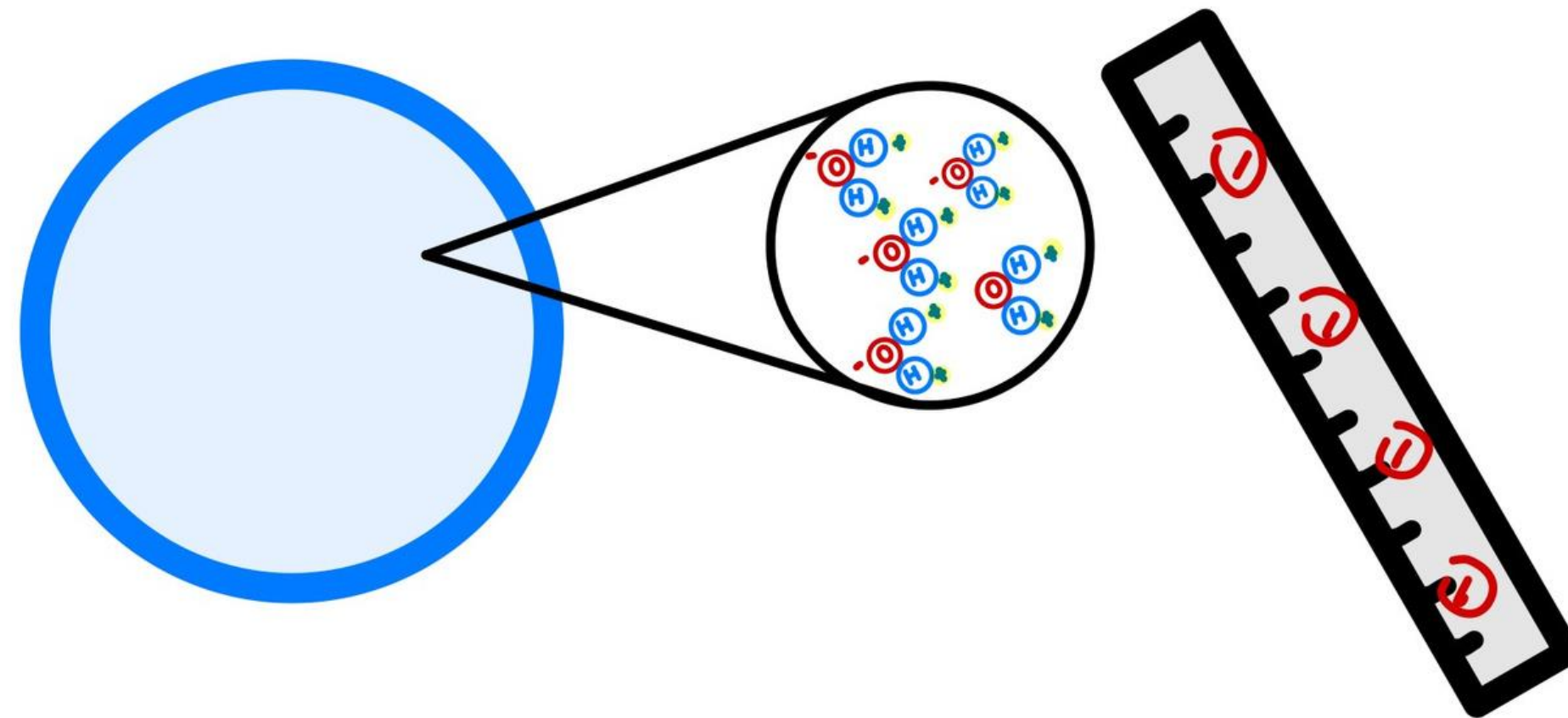# Water Spheres and Electrostatic Force

Chayanin Lerdudomsak
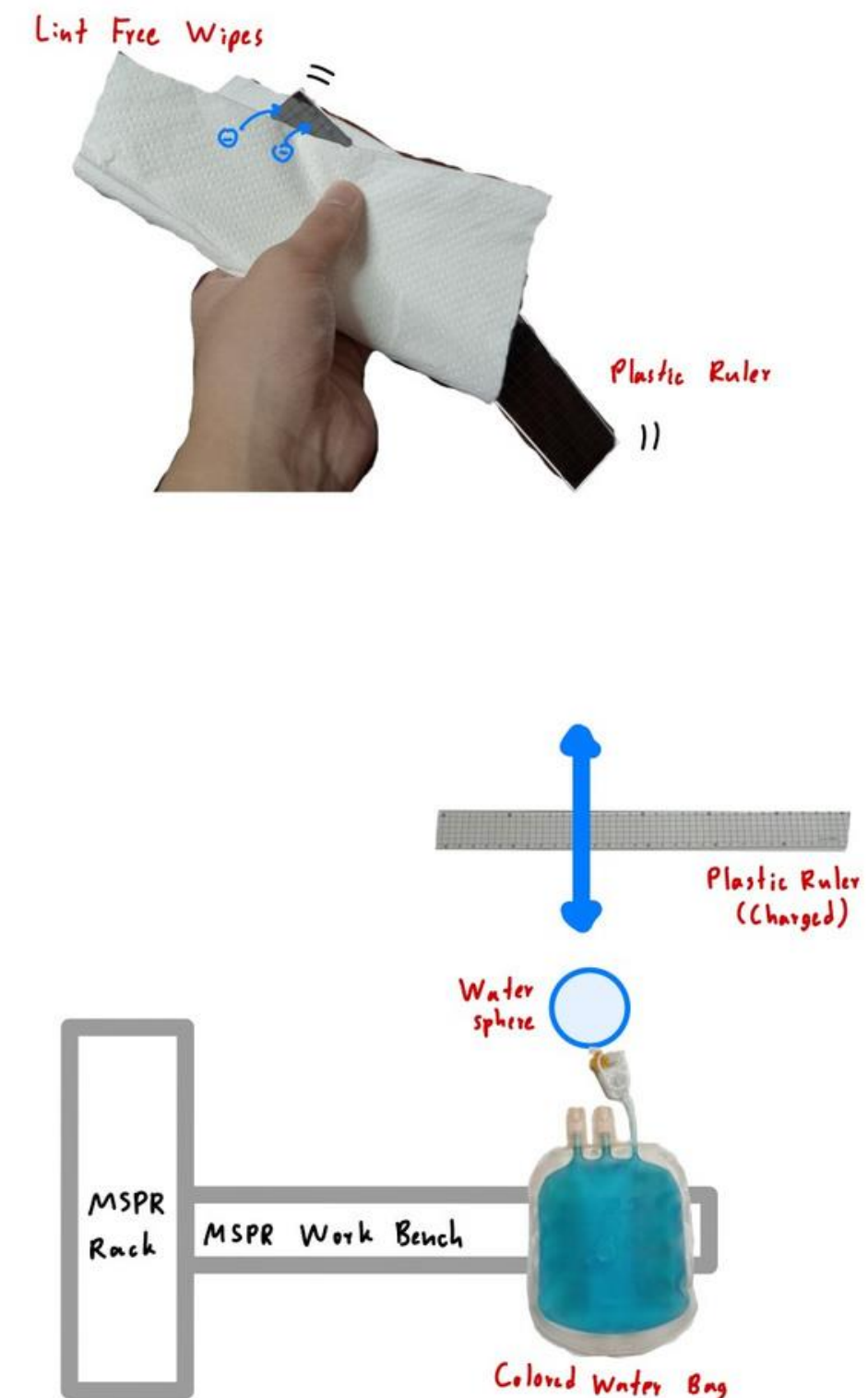**Suankularb Wittayalai School**
Thailand

Aim

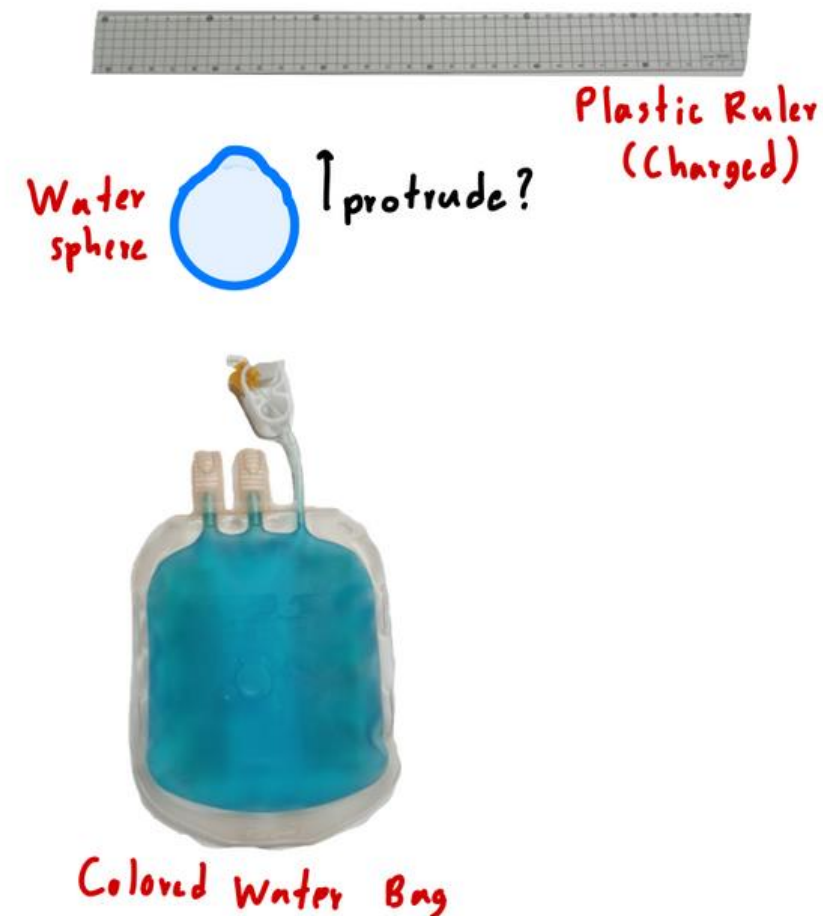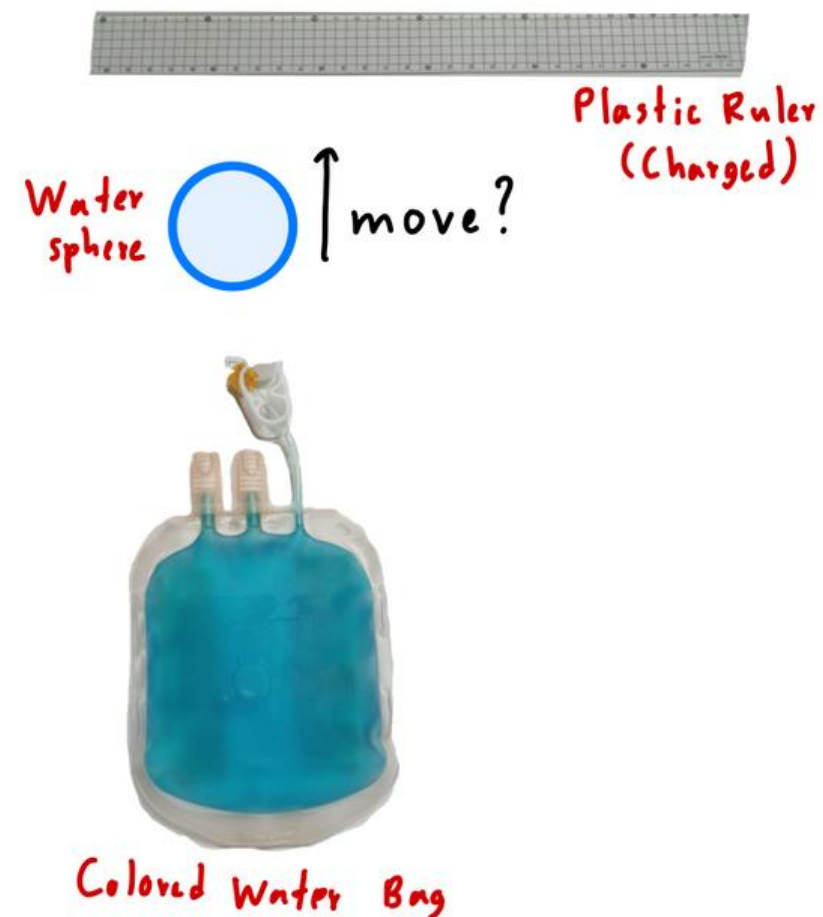- To study how static electricity affects water in microgravity

Methodology

- Build up electric charge on a plastic ruler by rubbing it with a lint free wipe

- Bring the ruler to above a water sphere attached to a bag, observing the effect of the electrostatic force
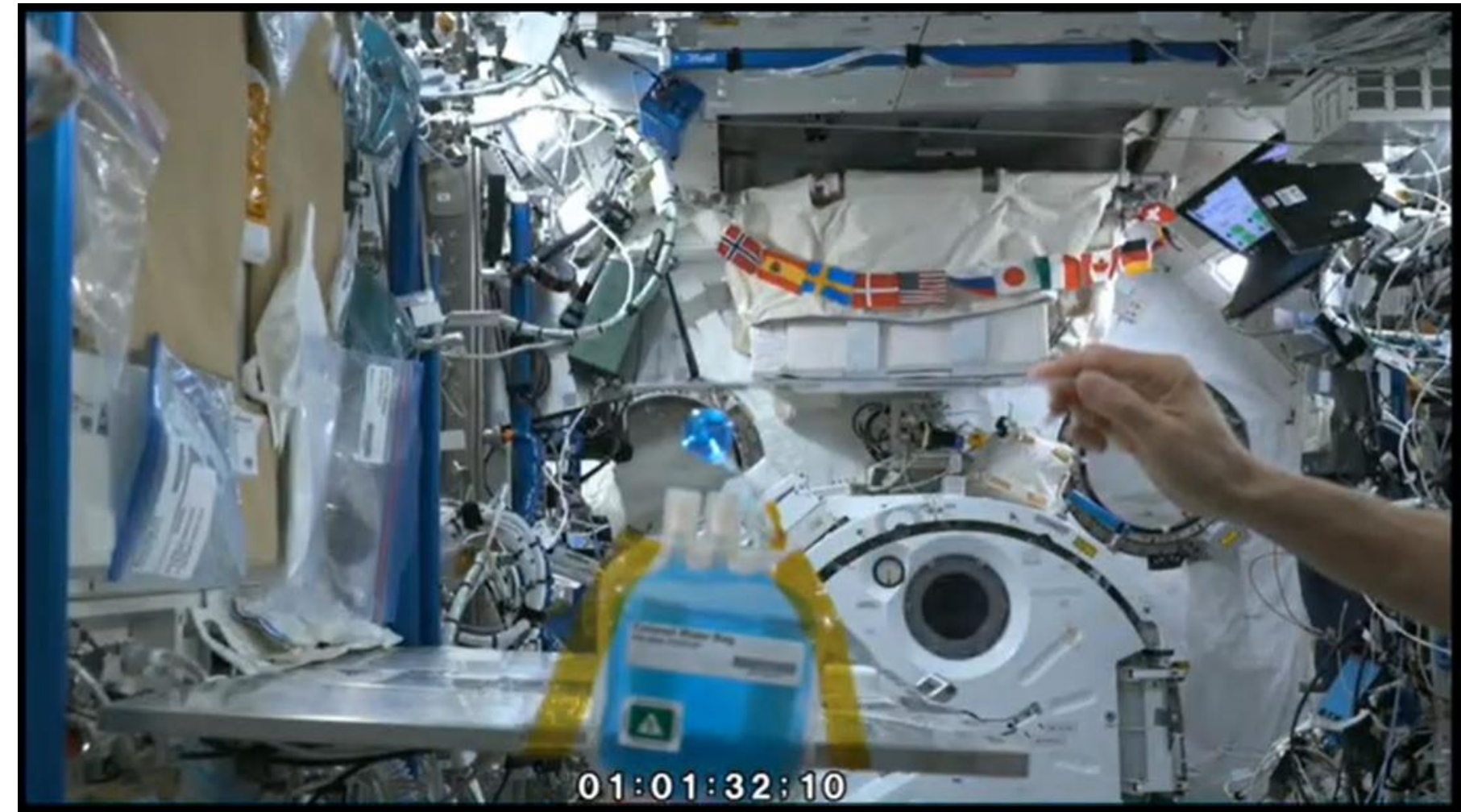
Hypotheses

- Microgravity will allow us to observe the action of electrostatic force on water more noticeably than on Earth.

- Water sphere will be attracted to charged plastic ruler, and will move or deform.

Results

- 1st attempt: No effect on the water ball

    ○ It can be observed that the charged plastic ruler might have gotten into contact with a ziploc bag before it was brought to the water sphere.

Credit: JAXA/NASA

Results

Credit: JAXA/NASA

- 2nd attempt: The water sphere flew off.

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  - Ruler was held long enough that the electric force surpassed the adhesion between the water sphere and the water bag.
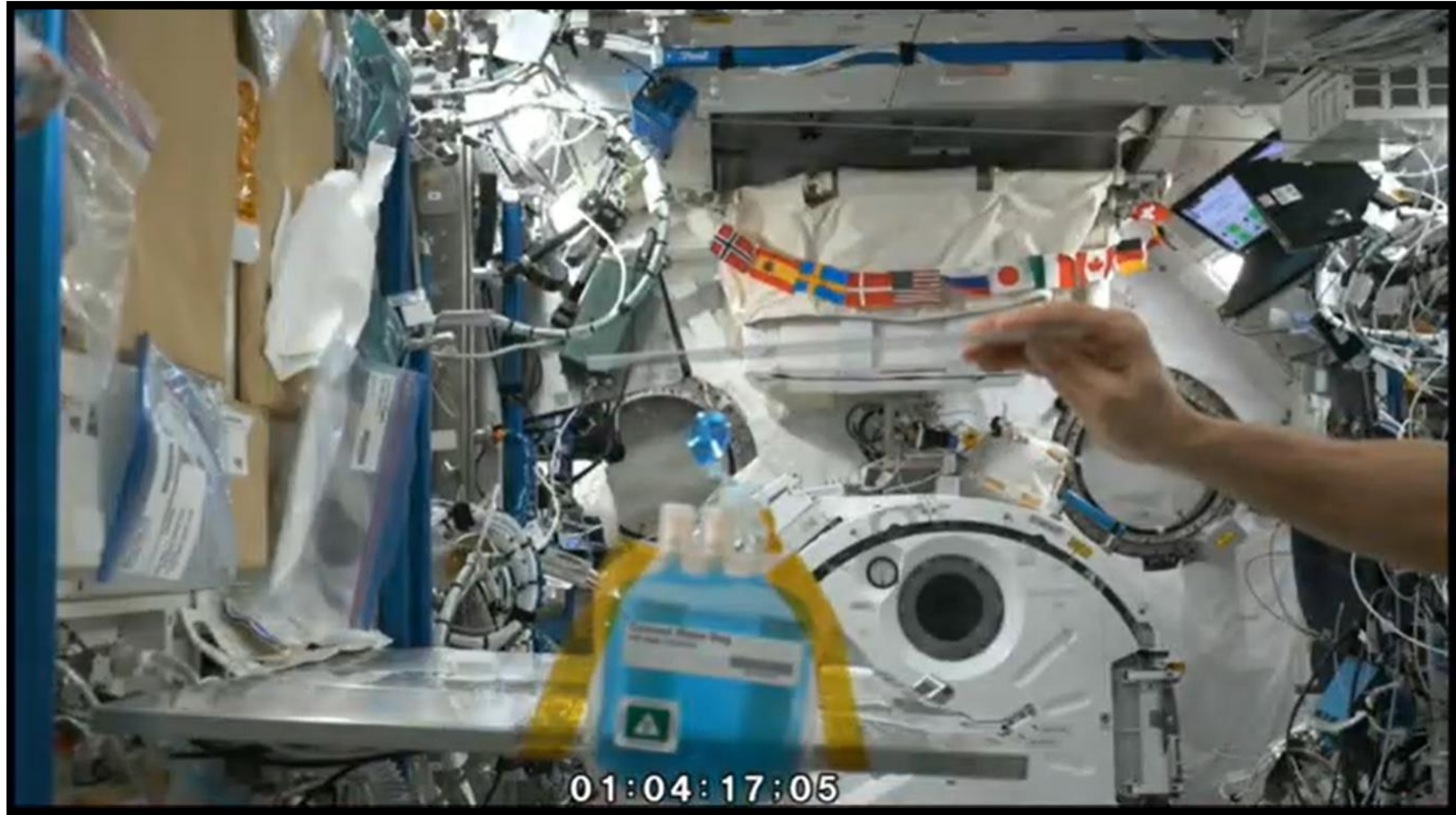
Results

- After flying away, the water sphere continued moving linearly with a shape oscillation effect.

Credit: JAXA/NASA

Results

- 3rd attempts:

    - The effect on the water sphere could clearly be seen, throughout the four trials.

    - As the ruler gets closer to the water ball, the site of deformation was at its base rather than at the site nearest to the ruler.
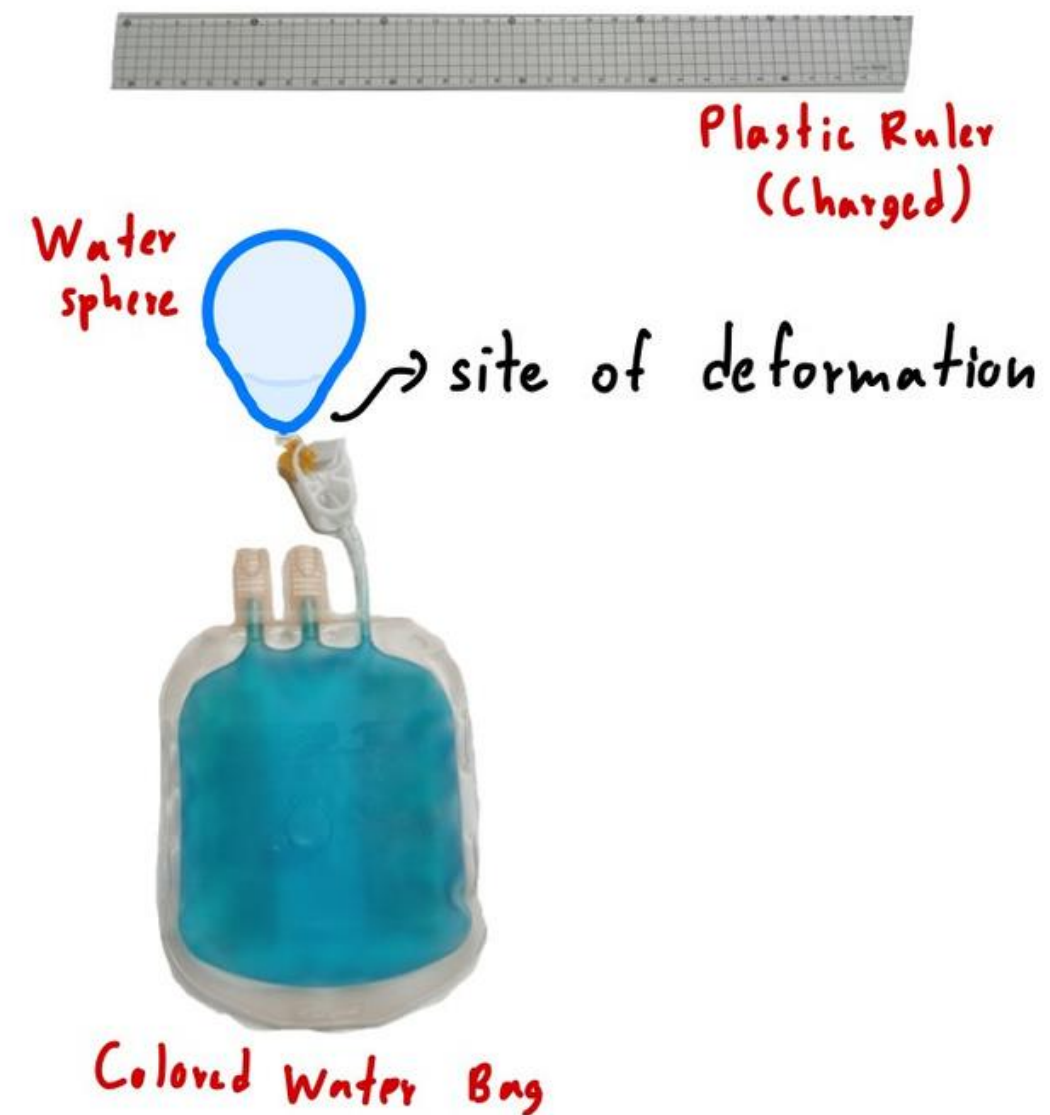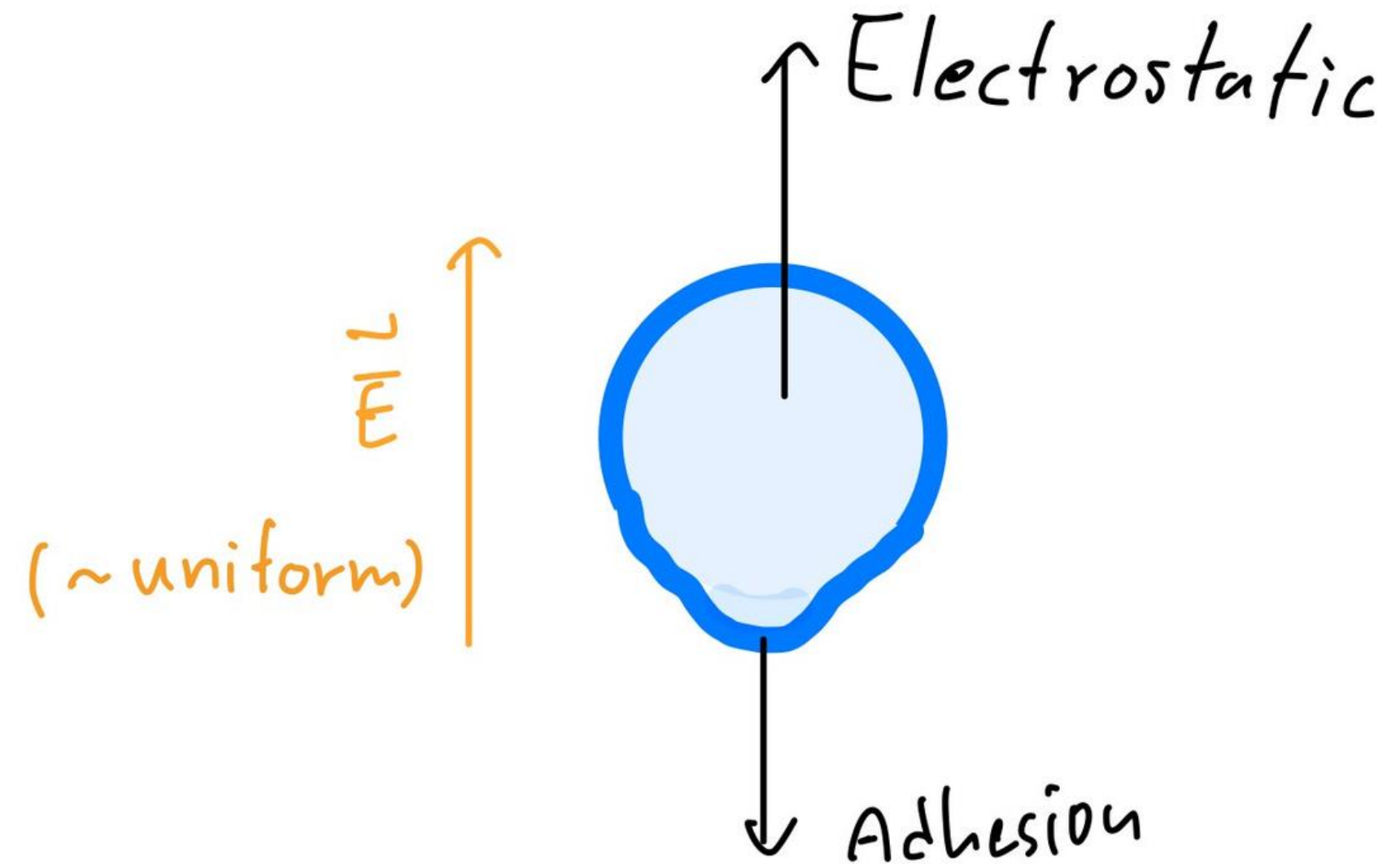
Credit: JAXA/NASA

Discussions

Discussions

- The electric field is approximately uniform throughout the water sphere, therefore the whole sphere is roughly equally affected by the force.

Discussions

- The surface tension of the water sphere is strong compared to the electric force, but weak compared to Earth's gravity.

- The lack of gravity allowed us to observe the strength of water surface tension in relation to electrostatic force from triboelectric effect.

Thank You!