Curiosity Guide #805
Speed of Sound
Accompanies Curious Crew, Season 8, Episode 5 (#805)

Silent Alarm
Investigation #1

Description
When is a sound not a sound?

Materials
- Bell jar
- Electric bell with a visible hammer
- Buzzer
- Microscale vacuum

Procedure
1) Turn on the electric bell. Place the bell in the bell jar.
2) Slowly begin to pump the air out of the chamber.
3) What do you notice?
4) Is the hammer still moving?

My Results
Explanation
The bell jar is a system that uses a pump and tube to remove air particles from within the jar. This action creates a vacuum. As the air is removed from the chamber, the bell gets quieter at first and eventually cannot be heard at all, even though the hammer is still visibly moving. We can’t hear anything because sound waves need a medium, like particles in a gas, liquid or solid, to propagate or travel. Sound waves are a kind of mechanical wave that travel through materials as the energy from a disturbance makes the particles vibrate in a parallel direction from the vibration. If there are no particles to transfer energy, no sound can be detected. That is why there is no sound in space.

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