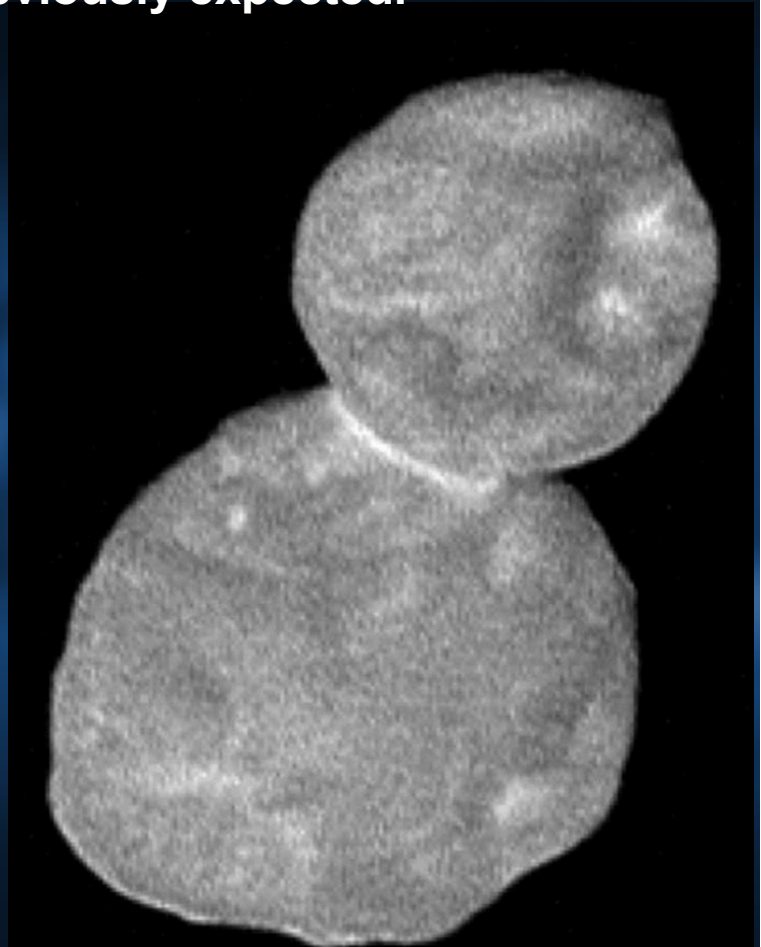


Late Formation of Outer Solar System Small Bodies

Research into how the density of Kuiper Belt Objects can inform their formation history indicate they came together later than previously expected.

- The outermost solar system contains many icy objects in the Kuiper Belt (like Pluto), but there is disagreement over how and when these formed.
- Radioactive decay heated these KBOs after they formed, which caused them to lose porosity and become denser.
- This heating process was modeled in a recent study, which looked at 18 KBOs and found that these small bodies had to form later than 5 million years after the solar system formed, when much of the early radioactive material had already decayed; otherwise they would have heated up too much and lost all their porosity.
- A late formation of Kuiper Belt Objects favors models in which they grow by collisions rather than from a collapsing cloud of “pebbles”.

Bierson and Nimmo (2019), *Icarus*.



Ultima Thule, a small (~10 km), low density Kuiper Belt Object, as photographed by the New Horizons spacecraft