The Disappearing Spoon

TEACHER DEMO | RUN AT 1:30 | 10 MIN

The point

A real metal spoon melts away in a mug of hot water — because Field's metal's own melting number (144 °F) sits **below hot-water temperature**. Metal obeys exactly the same rule as butter; it just has a different number.

Materials

- Field's-metal spoon (Bi-In-Sn — confirm it is Field's, never leaded Wood's metal)
- Ordinary steel spoon (the control)
- Clear glass mug of hot water (~170 °F — hot tap + kettle top-up, NOT boiling)
- IR thermometer gun

Steps

1. Pass BOTH spoons cold. **"Solid or liquid? Same or different?"** They look and clink the same.
2. IR-gun the mug; kids read the number (~170). Ask: is that above or below 144? Above or below steel's melting number (2500!)?
3. Stir with the **steel spoon** first: nothing. Its number is miles higher than the water's.
4. Swap in the **Field's-metal spoon** and stir slowly… mid-stir it softens, folds, and **melts away**, pooling as bright silver at the bottom.
5. Let kids peer through the glass at the metal puddle. **"Where did the spoon go? Nowhere — there it is, in its liquid costume."**
6. Cool the mug; show the solid lump after. (Recast it in its mold at home and the spoon returns for next year.)

> *Say: "Steel and Field's metal are both metal — but each has its own melting number. This water is hot enough for one and nowhere near the other."*

Fig. 6 — the spoon is still there — at the bottom, liquid

SAFETY

Hot water — **teacher's hands only**; kids watch from their seats. Field's metal is the non-toxic bismuth alloy, but like gallium it is **never for mouths**; the mug and lump are washed before kitchen re-use.

TEACHER PREP

Kettle staged by 1:25. Test water with the IR gun: aim for 160–180 °F — hot enough to melt in under a minute, no scalding boil. Keep the spoon's silicone mold for recasting.

What to watch for

- The bowl of the spoon goes first (thinnest part — A1 ice-shape echo)
- The liquid metal **flows to the lowest point** and takes the mug's shape — liquid rules apply to metal
- The steel control never changes — same water, different number

EXPECTED RESULT

Spoon melts in ~30–60 seconds; steel spoon unchanged. **Melting point is a property of the material, not of "being metal."**