Wright-Patterson AFB Educational Outreach

K-12 STEM

WPAFBSTEM.com

DIY Air Force Activities:

Floating Ink

WOW DIY

WIZARDS of WRIGHT

Materials:

- dry Erase Marker
- glass jar (old jam or pasta sauce jar will work)
- warm water (approx. ½-1 cup)
- paper towels (for spills or clean up)

*** for the bonus activity: cake plate and straws

You have seen people use a white board with special markers; these are called dry-erase markers. Used properly, these markers can be erased easily without leaving any marks. This is because dry erase markers contain special ingredients that make the ink slippery, keeping it from sticking to smooth hard surfaces like white boards and glass. Permanent markers, on the other hand, are the opposite of dry-erase markers. They cannot be erased from surfaces easily because they contain special ingredients that work like glue, making the ink stick to surfaces. Let's use the properties of the dry erase marker to do a fun experiment!

Directions:

1) Take your dry erase marker and draw or write something on the bottom of your glass jar. It is best to keep your drawing simple to start; a solid shape works best.
2) Gently pour some warm water into your glass. You do not need to fill it to the top, just add enough water to cover to just above your drawing. Observe what happens (you may need to swirl the glass gently).

Did your dry erase marker drawing float to the top of the water? Does the experiment work better when your drawing is made with thick or thin lines? How about a solid shape vs. a drawing of a stick figure or letters? Can you pick up your floating drawing? What happens when you do? While doing this experiment, what other kinds of observations can you make? The ink in these markers does not soak into the surface, but dries on top. This is different than other types of markers (like permanent) and is why we can lift it off or erase it easily!

Air Force Associations:

Just like these markers are made of "special" ink designed for a specific purpose, the Air Force is creating other special types of ink. One example is conductive ink. This technology called Plexcore, developed in conjunction with a company called Plextronics, allows inexpensive, ultra-thin solar cells to be printed on flexible surfaces. This opens the door to highly efficient, portable solar devices that could even include solar tent materials!

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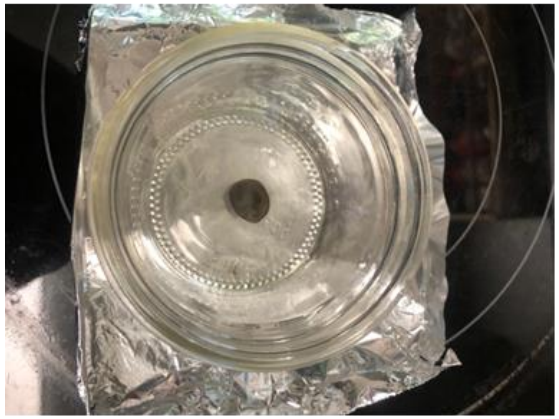

Helpful Tips:

- Brand new Expo brand markers work best.
- Dark colors seem to work better than lighter colors.
- Press lightly when you write and draw on the plate. If you press too hard the ink will have a hard time lifting.
- Be sure to add the water slowly from the side.

Bonus Activity:

With an adult's permission: Using a glass cake plate, have each person draw a dot on one end of the plate. Add warm water. Once the dots are floating, use a straw to blow on them and race them across the plate!