Experiment with Invisible Writing

Calling Mata Hari and Albert Einstein! Here's a mystery project that will inspire both spies and scientists alike. Using simple household objects and supplies, your child will draw an invisible picture that appears as if by magic when exposed to heat! Your child will not only love the anticipation as the invisible becomes visible … she'll be practicing simple scientific concepts along the way.

What You Need:

- Plain white paper
- Lemon juice, squeezed into a jar
- Q-tips, a paintbrush, and/or a toothpick
- Lamp

What You Do:

1. Choose your materials: a toothpick or Q-tip will work best for writing, while a paintbrush will work better for painting.
2. Have your child dip his chosen implement into the lemon juice and paint a picture (or write a letter) on the paper. It will be hard to see his work, so don't expect perfection!
3. Let the paper dry thoroughly.
4. When you're ready to unveil the hidden message, remove the lampshade from a lamp, turn the light on, and hold the paper up to the light bulb. Be careful not to burn little fingers!
5. As the lemon juice heats up, the painting will appear as if by magic!

What's Going On?

Lemon juice contains citric acid. Heat encourages the acid to oxidize, which is a chemical reaction between oxygen in the air and a substance. (Oxidation is what happens when you cut an apple and leave it sitting out: it turns brown because the citric acid in the apple oxidizes.) So when the lemon juice ink is heated by the lamp, the lemon juice turns brown. The writing appears!

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