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AN OIL PIPELINE

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## CSI TOOL FROM ANCIENT EGYPT

By A. R. Williams

Crime scene investigators are about to get an assist from the land of the pharaohs. New research has shown that a pigment called Egyptian blue, formulated some 5,250 years ago, can be used as dusting powder to detect fingerprints on complicated surfaces.

The earliest known synthetic pigment, Egyptian blue is found in some of the paint that still colors ancient statues, coffins, and tomb walls. **Modern scientists were intrigued by this long-lasting tint and figured out its chemical components decades ago. More recently they discovered that it emits near-infrared radiation when exposed to a certain kind of light.** Researchers have now

demonstrated the forensic potential of that rare, invisible luminescence.

After a crime is committed, police may dust relevant surfaces with a powder of a contrasting color. The powder sticks to the unique features of any fingerprints, providing visual proof that an individual was there. But prints may be hard to pick out on a shiny or highly patterned surface. That's where Egyptian blue can make a difference.

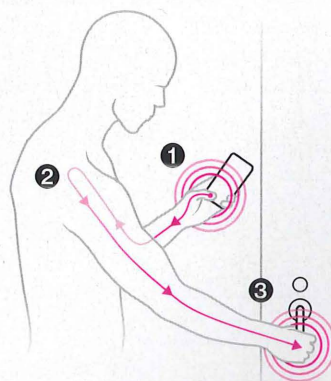
The pigment is brushed on as usual. But the surface is then photographed under a white light with a modified camera and a filter sensitive to near-infrared rays. If fingerprints exist, they glow clearly in the resulting image.

One company is already marketing the powder, says Australian forensic chemist Simon Lewis, a member of the research team. "We expect it won't be long before it's used by law enforcement."

Egyptian blue, shown here as a powder, is made by heating a mixture of copper, quartz sand, lime, and an alkali such as natron, a salt found in dry lake beds.

## BODY SIGNALS

Here's a puzzle that troubled Shyam Gollakota, a computer scientist at the University of Washington: How do you transmit a password to a smart device—say, a door lock—without using hacker-prone Wi-Fi or Bluetooth? "The human body was the perfect solution," says Gollakota. He found that a relatively low frequency signal can be sent from a smartphone's fingerprint sensor via the body to the object that needs to be unlocked. —*Nina Storchli*



### How it works

- 1** A signal is generated by the fingerprint sensor on a smartphone.
- 2** The signal is transmitted via a small electric current across the body, with no known health impacts.
- 3** When the signal reaches a sensor on a terminus (such as a doorknob), the object is unlocked.