SCIENTIFIC AMERICAN™

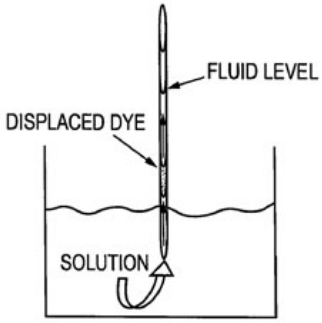
Permanent Address: http://www.scientificamerican.com/article/patent-watch-molecularly-imprinted-polymer-sensor-device/
More Science » Scientific American Volume 308, Issue 1 » Advances

See Inside

Patent Watch: Molecularly Imprinted Polymer Sensor Device

Dec 18, 2012 | By Marissa Fessenden |

Molecularly imprinted polymer sensor device: Ketamine, Rohypnol and gamma-hydroxybutyrate (GHB) are so-called date-rape drugs that render victims compliant and vulnerable to sexual assault. To easily detect such drugs in a drink, George Murray, now chief scientist for Raptor Detection Technologies, and his colleagues turned to polymer chemistry.



COURTESY OF U.S. PATENT AND TRADEMARK OFFICE

Patent no. 8,241,575 details a thin, hollow device lined with polymer molecules cradling dye-tagged versions of the drugs. When the tube is placed in a spiked drink, capillary action draws liquid up, and the dye-tagged molecules swap places with those in the drink. In a positive sample, the drink inside the straw will quickly change color and creep up the length of the tube, alerting the would-be drinker. Murray's method builds each unit of the polymer piece by piece, giving him precise control over the number of chemical binding sites inside the device. Solutions with more drug molecules will displace dye farther up the tube, and how high the color change appears corresponds to concentration.

The method can also be used to detect other chemicals—the designer simply embeds the desired target molecule in the plastic matrix. Murray's employer already markets molecularly imprinted polymers as explosive detectors and holds the license to the date-rape prevention device.

This article was originally published with the title "Patent Watch."