

The first molecular keypad lock

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How can defense or intelligence agencies safeguard the security of top-secret data protected by a computation device the size of a single molecule?

With cryptography approaching that sobering new era, scientists in Israel are reporting development of what they term the first molecular system capable of processing password entries. Abraham Shanzer and colleagues describe their "molecular keypad lock" in the Jan. 17 issue of the weekly *Journal of the American Chemical Society*.

Electronic keypad locks long have been fixtures on home security systems and other devices that require a password. The new study, however, describes a keypad lock based on molecules that fluoresce only in response to the correct sequences of three input signals.

"By harnessing the principles of molecular Boolean logic, we have designed a molecular device that mimics the operation of an electronic keypad, a common security circuit used for numerous applications in which access to an object or data is to be restricted to a limited number of persons," the researchers state. "The development of a molecular-scale keypad lock is a particularly attractive goal as it represents a new approach to protecting information at the molecular scale."

The researchers cite DNA-microdot encryption as a complementary approach, which in combination with their molecular lock might provide an unbreakable protection against forgery.

Source: American Chemical Society

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