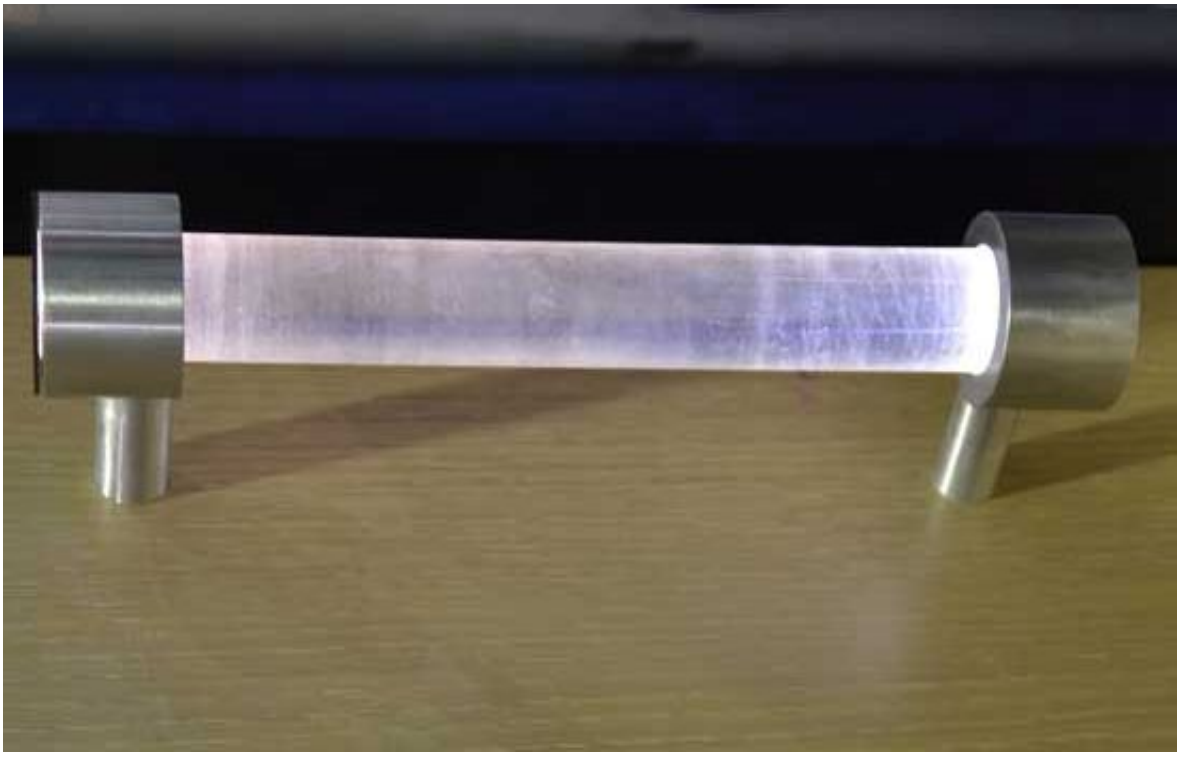
Students' invention offers germ-free door handle

June 22 2015, by Bob Yirka



Two high school students, Sum Ming Wong and Kin Pong Li, both living in Hong Kong have designed and built a door handle that kills germs, thus preventing the spread of disease through hand contact. They demonstrated their handle at the Intel International Science and Engineering Fair held last month in Pittsburgh—taking second place in the materials science category.

One of the ways that ailments such as cold and flu are passed is via contact, and one of the main avenues is via door handles—a sick person coughs into their hand then uses the handle to enter a bathroom, office, or other location, depositing germs. Others that enter the same room pick up the germs from the door handle and invite the germs into their own bodies by touching their eyes or noses. Door handles that kill such germs on contact would stop them from spreading—that is what Wong and Li set out to build.

The pair started by noting that a mineral called titanium dioxide is quite toxic to germs, but it hasn't been used as an antibacterial agent much because it requires the presence of UV light. To get around this problem, the team ground some of the mineral and then used it to coat a glass tube, they then affixed a LED onto one end of the tube—it shines UV light onto the insides of the glass tube—any germs that land on the outer side are then killed by the mineral (testing showed it to be 99.8 percent effective). Putting the glass tube onto brackets allowed for it to be used as a door handle.

But that wasn't the end of the story, realizing that hooking the handle up to an electrical outlet would be messy, and relying on batteries would be iffy, they put together a gear box that allows for capturing energy from the door opening and closing. That energy is then sent to a battery that feeds power to the door handle, keeping it lit all the time, not only killing germs, but making it easy to see. Amazingly, the co-creators report, building the door handle only costs about $13—minus labor. At this time it is not clear if the two students will be attempting to market the door handle, but it would seem a good idea. Also, it appears the same design could work in other areas, such as with shopping carts, handrails on escalators, etc.

More information: student.societyforscience.org/ … r-handle-kills-germs

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