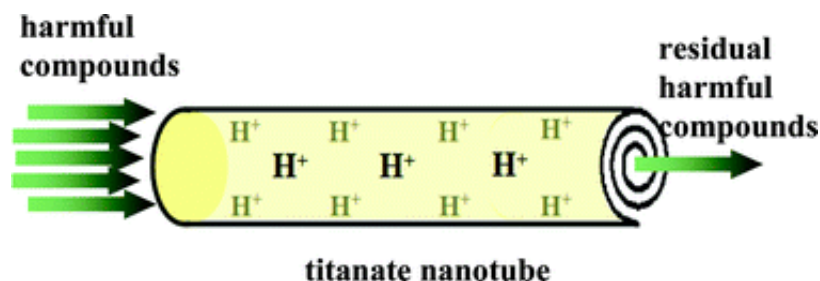


Titanate cigarette filter could be safer

May 4 2011, by Deborah Braconnier



(PhysOrg.com) -- While current cigarettes are made with a filter created from cellulose acetate which absorbs things like nicotine, tar, and polycyclic aromatic hydrocarbons, Chinese researchers have discovered that nanomaterials from titanium dioxide (TiO_2) can be used to reduce the harmful chemicals.

For many years, researchers have been looking at adding [nanomaterials](#) to current cigarette filters and have tried carbon nanotubes and mesoporous silica. These have worked well; however, they are expensive and like are known about possible health risks.

Mingdeng Wei, from Fuzhou University has teamed with colleagues at the Fujian Tobacco Industrial Corporation and has discovered that titanate nanotubes and nanosheets can be used to filter [tobacco smoke](#) and greatly reduce the harmful effects. Nanomaterials can be easily synthesized with [titanium dioxide](#) at a relatively inexpensive cost. Since

TiO₂ is currently on the market and found in products such as cosmetics, sunscreens, and even food, there is no possible health risk.

The team created both [titanate](#) nanosheets and nanotubes to compare them when added to the tips of [cigarettes](#). Using a machine to smoke them and the use of high performance liquid chromatography and ion chromatography to measure the amount of captured chemicals, Wei and his team discovered that the tubes were twice as efficient as the sheets.

While their research is currently looking at the benefits of the TiO₂ nanomaterials with cigarettes, their hope is it could also be used in other filtering devices such as air purification systems and gas masks.

More information: Significant reduction of harmful compounds in tobacco smoke by the use of titanate nanosheets and nanotubes, Qixin Deng, Chaozhang Huang, Wei Xie, Jianping Zhang, Yiqiang Zhao, Zhensheng Hong, Aiyang Pang and Mingdeng Wei, *Chemical Communications*, 2011, Advance Article [DOI: 10.1039/C1CC10794A](https://doi.org/10.1039/C1CC10794A)

Abstract

Titanate nanosheets and nanotubes have first been introduced into cigarette filter, a great range of harmful compounds including tar, nicotine, ammonia, hydrogen cyanide, selected carbonyls and phenolic compounds can be reduced efficiently.

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