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## A "Mood Ring" For Brain Trauma

A new color-changing badge may help medics determine the severity of brain trauma in soldiers exposed to bomb blasts

By Megan Miller Posted 08.07.2008 at 6:24 pm



Mood rings contain crystal that changes structurally, much like the crystals used to detect bomb blasts: *Photo by happyrings.com*

The September *Popular Science* feature "Shock to the System" (on newsstands next week), discusses the hidden danger of brain trauma faced by soldiers exposed to bomb blasts. The article reveals that one in five American soldiers serving in Iraq may be suffering from a brain injury—not from direct contact with explosions, but from the effects of bomb blast waves that can cause life-threatening damage at the cellular level, even from distances previously considered safe.

Since press time, however, [a new innovation has surfaced](#) that might speed the diagnosis and treatment of concussions in the field.

University of Pennsylvania professor Shu Yang has developed a color-changing crystal film that may serve as an indicator of the severity of shockwaves. The mesh-like molecular structure of the crystal shifts in response to blasts, causing the surface of the film to change color.

"Depending on the damage, you'll have different color intensities," Professor Yang told the BBC. "Based on that information we can extract how much force the soldier has received."

This information could be lifesaving, since brain trauma from bomb blasts is often slow to manifest symptomatically, and may not be visible on MRI scans.

While more research needs to be done to correlate the shifts in color with the amount of neurological damage a soldier may have incurred, the technology seems promising. If all goes according to plan, the color crystals will be worn as badges on military uniforms. In the event of a severe blast, a warning color will provide an instant visual alert that a soldier should be examined for possible brain injury.

### 1 COMMENT

David M. Gage

Article Rating:

08/10/08 at 2:47 pm

It is terribly sad that the majority of military based nations believe that they need the most powerful military possible in order to minimize or totally prevent the unwanted aggression seemingly always available from another military based nation. Violence begets violence but is very necessary for all military systems no matter if those who are involved are exposed to the unwanted damages such as those highlighted in the "Shock to the System" article.

Well, as found in the book "True Freedom - The Road to the First Real Democracy" there actually is far better alternative to the national defense systems for most nations. Not only can the need for the military types mostly

used today be eliminated the national defense for the nations which want to participate can be improved and at a far lower cost. Just think, the U.S.A. could actually eliminate the personnel damages and their related fighting costs created by having so many human animals go off to fight and the nation be far more secure at the same time.

Take a look at the Military Defense System laid out in this book and you will learn that there actually is a far better approach in dealing with a nation's national defense, both when it comes to having the best defense system possible and at a far lower cost than the all of the past and present national defense systems.

David M. Gage

Author of "True Freedom - The Road to the First Real Democracy" found on the website [www.truefreedom.tv](http://www.truefreedom.tv)

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