



American
Physical
Society
One Physics Ellipse
College Park, MD 20740-3844
www.aps.org

Heating Nanoparticles to Kill Tumor Cells

*Virginia Tech Researchers Explore Promising New Cancer Treatment
Presentation at Fluid Dynamics Meeting Today in Long Beach, CA*

EMBARGOED for release until 5:00 p.m. Eastern time (U.S.) on Tuesday, Nov. 23, 2010

Contact: Jason Socrates Bardi,
American Institute of Physics
301-209-3091, office
858-775-4080, cell
jbardi@aip.org

WASHINGTON, D.C., November 23, 2010 -- Magnetic fluid hyperthermia (MFH) is a promising new cancer treatment that essentially "fries" cells inside tumors. The procedure has been used successfully in prostate, liver, and breast tumors. Magnetic nanoparticles (each billionths of a meter in size) are injected into the body intravenously and diffuse selectively into cancerous tissues. Add a high-frequency magnetic field, and the particles heat up, raising the temperature of the tumor cells.

"The entire tumor volume is heated above a threshold treatment temperature -- typically 42 degrees Celsius (107.6 degrees Fahrenheit) -- for generally 30 minutes," explains engineering graduate student Monrudee Liangruksa of Virginia Tech.

The outcome? As described today at the American Physical Society Division of Fluid Dynamics (DFD) meeting in Long Beach, CA, when the nanoparticles are heated, cancer cells die with no adverse effects to the surrounding healthy tissue.

To further perfect the technique, Liangruksa and her colleagues explored the effects of different types of magnetic nanoparticles. The most promising varieties, they found, were iron-platinum, magnetite, and maghemite, all of which generate therapeutically useful heating. "However, we wish to use MFH in humans," she says, and "the most biocompatible agents are magnetite and maghemite. Iron-platinum is toxic and vulnerable to oxidation."

The presentation, "The Effects of Magnetic Nanoparticles on Magnetic Fluid Hyperthermia" is at 2:08 PM on Tuesday, November 23, 2010 in the Long Beach Convention Center Room: 202A. ABSTRACT: <http://meetings.aps.org/Meeting/DFD10/Event/134121>

MORE MEETING INFORMATION

The 63rd Annual DFD Meeting is hosted this year by the University of Southern California, California State University Long Beach, California Institute of Technology, and the University of California, Los Angeles.

It will be held at the Long Beach Convention Center, located in downtown Long Beach, California. All meeting information, including directions to the Convention Center is at: <http://www.dfd2010.caltech.edu/>

USEFUL LINKS

Main meeting Web site: <http://www.dfd2010.caltech.edu/>

Search Abstracts: <http://meetings.aps.org/Meeting/DFD10/SearchAbstract>

Directions to Convention Center: <http://www.longbeachcc.com/>

PRESS REGISTRATION

Credentialed full-time journalist and professional freelance journalists working on assignment for major publications or media outlets are invited to attend the conference free of charge. If you are a reporter and would like to attend, please contact Jason Bardi (jbardi@aip.org, 301-209-3091).

ONSITE WORKSPACE FOR REPORTERS

A reserved workspace with wireless internet connections will be available for use by reporters in the Promenade Ballroom of the Long Beach Convention Center on Sunday, Nov. 21 and Monday, Nov. 22 from 8:00 a.m. to 5:00 p.m. and on Tuesday, Nov. 23 from 8:00 a.m. to noon. Press announcements and other news will be available in the Virtual Press Room (see below).

VIRTUAL PRESS ROOM

The APS Division of Fluid Dynamics Virtual Press Room will be launched in mid-November and will contain dozens of story tips on some of the most interesting results at the meeting as well as stunning graphics and videos. The Virtual Press Room will serve as starting points for journalists who are interested in covering the meeting but cannot attend in person. See: <http://www.aps.org/units/dfd/pressroom/index.cfm>

GALLERY OF FLUID MOTION

Every year, the APS Division of Fluid Dynamics hosts posters and videos that show stunning images and graphics from either computational or experimental studies of flow phenomena. The outstanding entries, selected by a panel of referees for artistic content, originality and ability to convey information, will be honored during the meeting, placed on display at the Annual APS Meeting in March of 2011, and will appear in the annual Gallery of Fluid Motion article in the September 2011 issue of the American Institute of Physics' journal, Physics of Fluids.

This year, selected entries from the 28th Annual Gallery of Fluid Motion will be hosted as part of the Fluid Dynamics Virtual Press Room. In mid-November, when the Virtual Press Room is launched, another announcement will be sent out.

ABOUT THE APS DIVISION OF FLUID DYNAMICS

The Division of Fluid Dynamics of the American Physical Society (APS) exists for the advancement and diffusion of knowledge of the physics of fluids with special emphasis on the dynamical theories of the liquid, plastic and gaseous states of matter under all conditions of temperature and pressure. See: <http://www.aps.org/units/dfd/>

####