



Excellence in Physics  
enables Thailand  
to be self-reliant  
and to have a  
self-sufficient economy.

ศูนย์ความเป็นเลิศด้านฟิสิกส์

Thailand Center of Excellence in Physics

Physics: the key to science and technology.



# The Thailand Center of Excellence in Physics : the “ThEP Center,”

Created following approval from the government on 27 November 2007,

Demonstrating that the academic physics community supports local and national industries with well-trained graduates and innovative ideas.

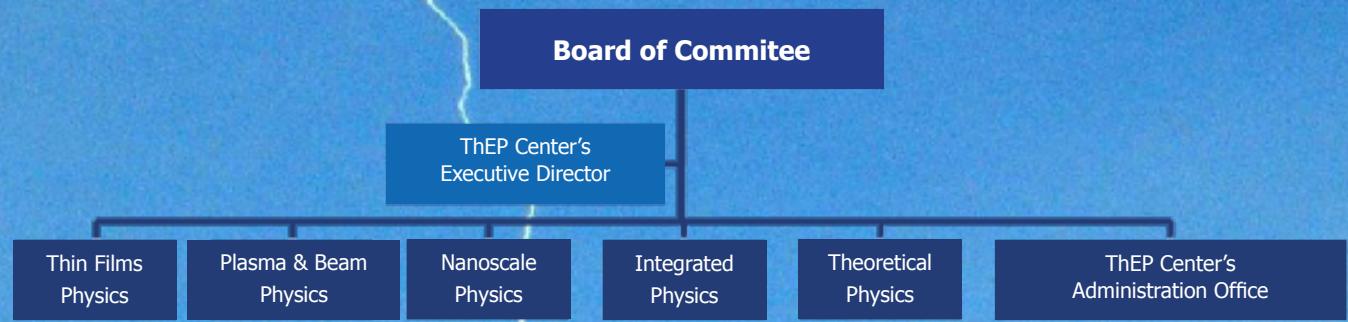
The ThEP Center is a collaboration of more than twenty Thai universities

Research and graduate programs are conducted in five areas.

- (I) Physics of Thin Films,
- (II) Particle Beams and Plasma physics,
- (III) Nano-scale Physics,
- (IV) Computational and Theoretical Physics,
- (V) Integrated Physics.



With 23 lab members from north to south.



More information at:  
<http://www.thep-center.org>



# ThEP Center's Innovation : Nano Crystal Glasses for Medical and Industrial Applications

Protecting physician's eyes during laser surgery



Only 1 Million baht needed for research,  
Thailand can save 100 million baht for import.

## Nano Crystal Glasses



Protecting technicians eyes during welding.

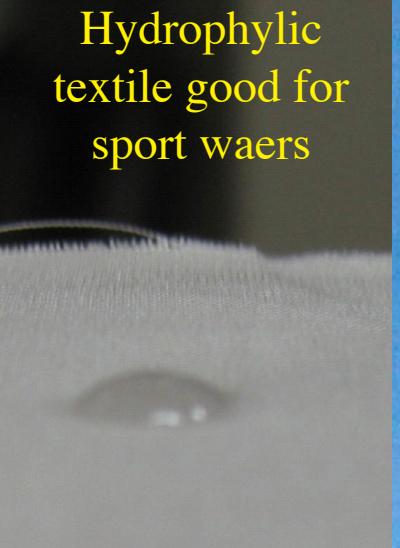


# Know-how in Plasma Research : ThEP Center's Value Creation for Thailand Sports Players

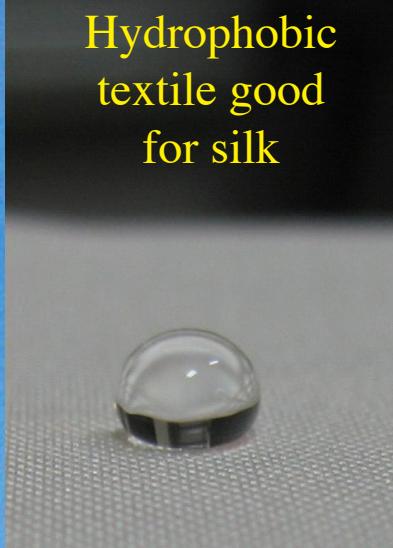
Plasma  
Treatment  
Chamber



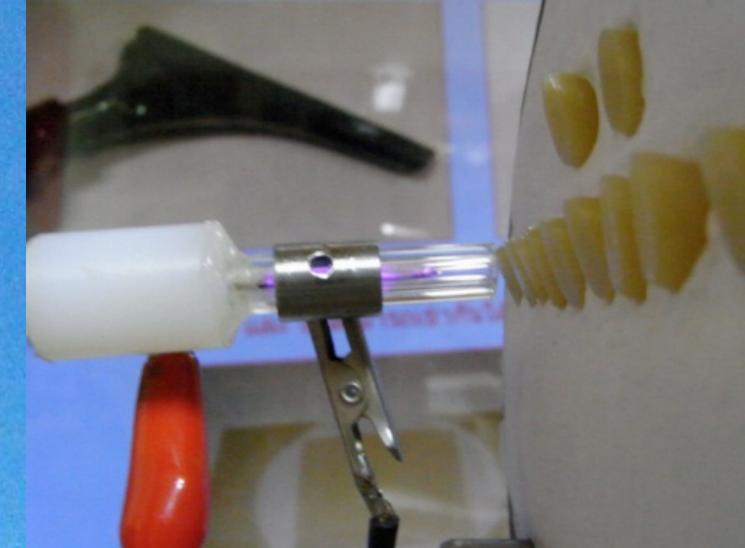
Hydrophylic  
textile good for  
sport waers



Hydrophobic  
textile good  
for silk

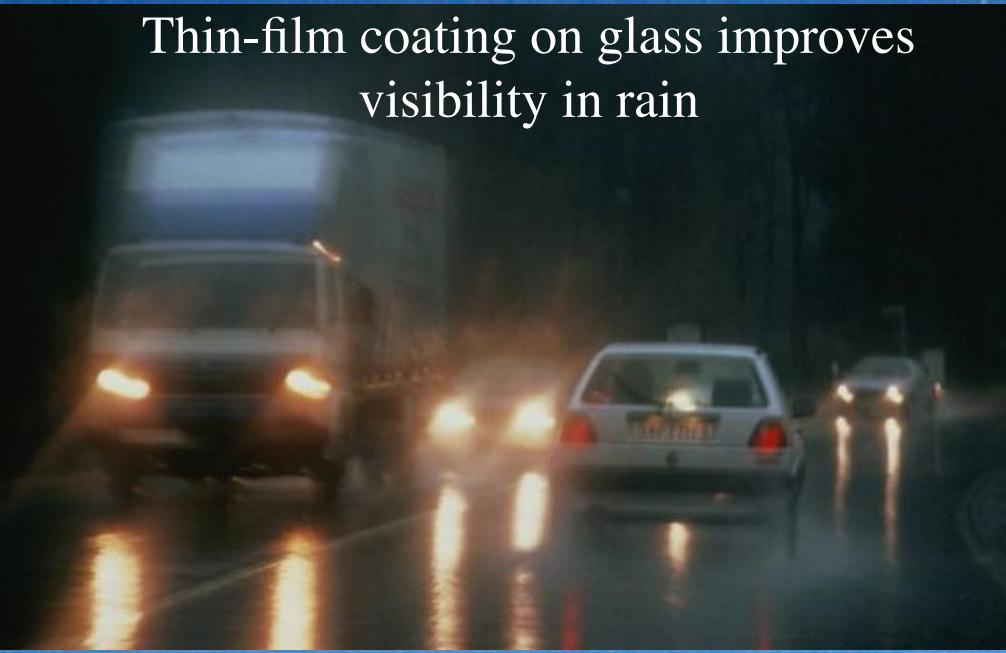


Plasma jet improves dental materials



# Thin-Film Technology : ThEP Center's films Save Lives and Reduce Road Accidents.

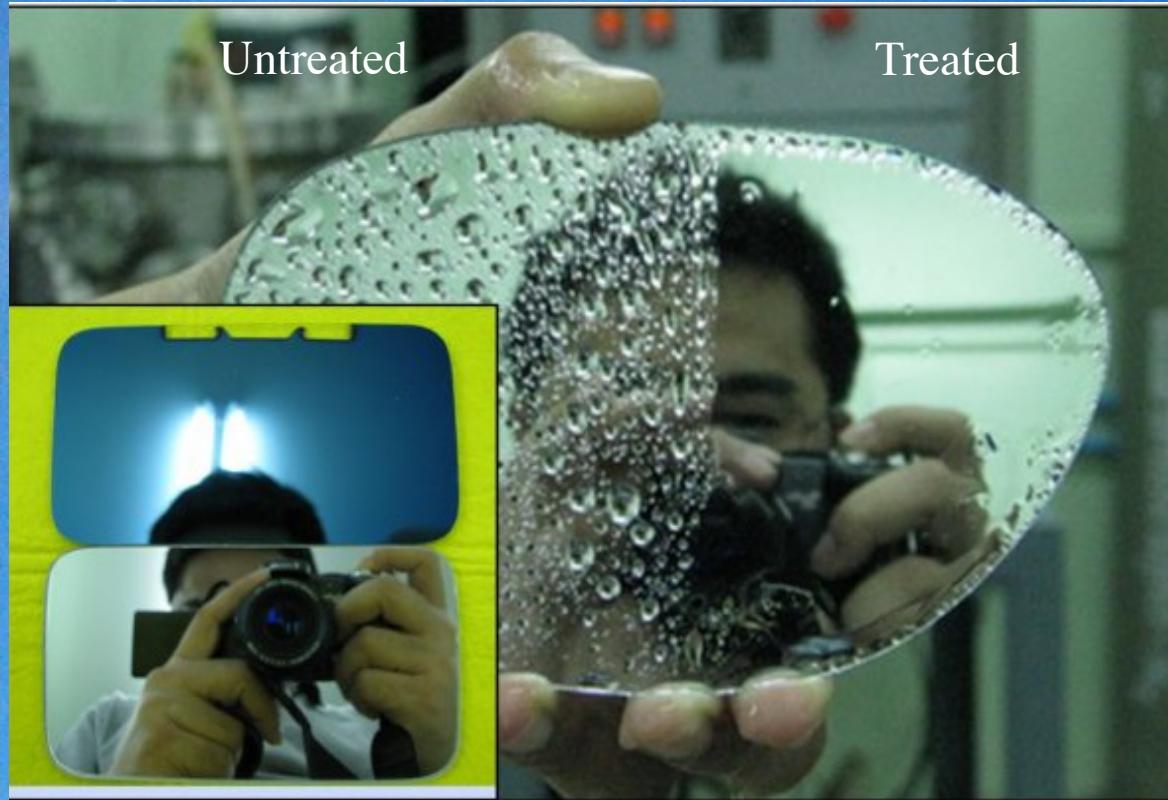
Thin-film coating on glass improves visibility in rain



Road accidents are a leading cause (number two after cancer) of deaths of Thai people



Physical Vapour Deposition (PVD) Chamber



Blue mirror

No more drops mirror

# Microwave Innovation : ThEP Center Improves Food Quality for Consumers



Microwave drying process improves quality, reduces costs and time.



Industrial size microwave oven.

Only 100,000 baht for pilot process  
Thailand can save 10 million baht/machine



# Technology for Police : ThEP Center's Alcohol Screening Machine.

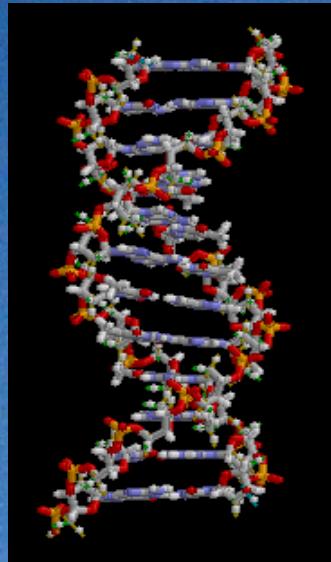


Alcohol Screening Machine  
Saving Live with Thai Technology



Ethanol sensor

# Ion-Beam Technology : ThEP Center Improves Flower and Rice Productivity.



Ion beam induced new purple rice,  
from jasmine rice.



Ion-beam technology to induce genetic alterations  
producing new varieties of plants



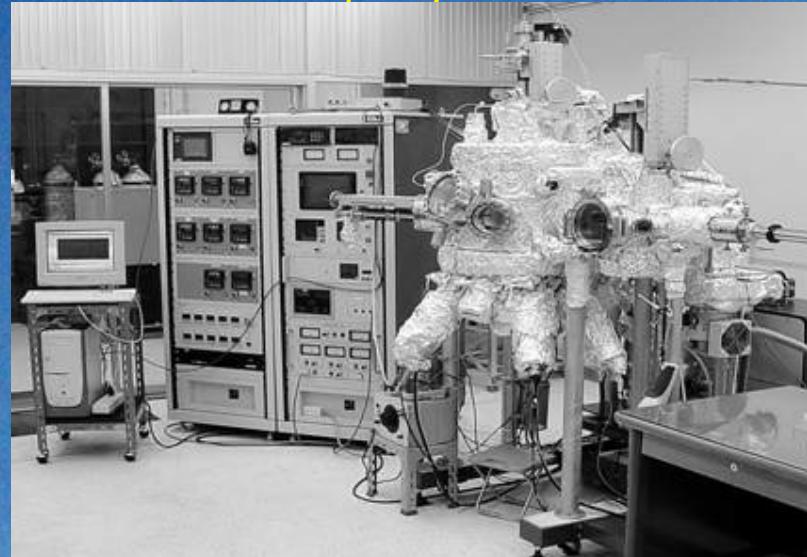
Ion beam induced new gerbera flower.



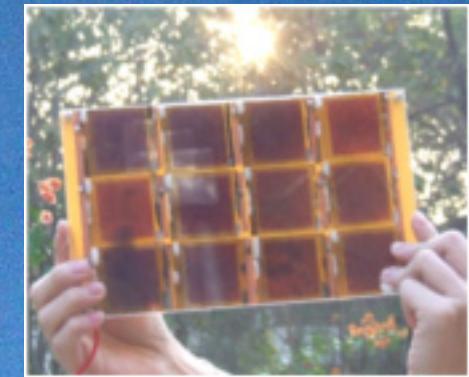
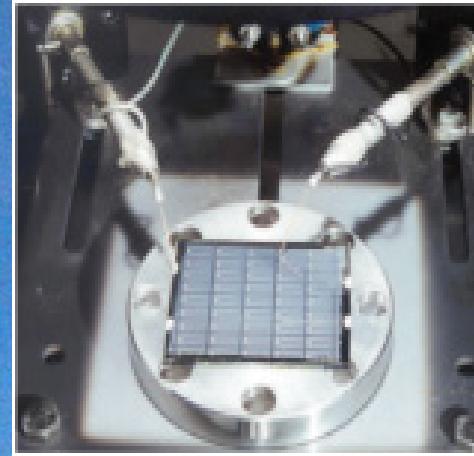
Increase of rice productivity

# Thin Film for Photovoltaics : ThEP Center's Innovation for Sustainable Energy.

## Molecular Beam Epitaxy for Thin Film CIGS

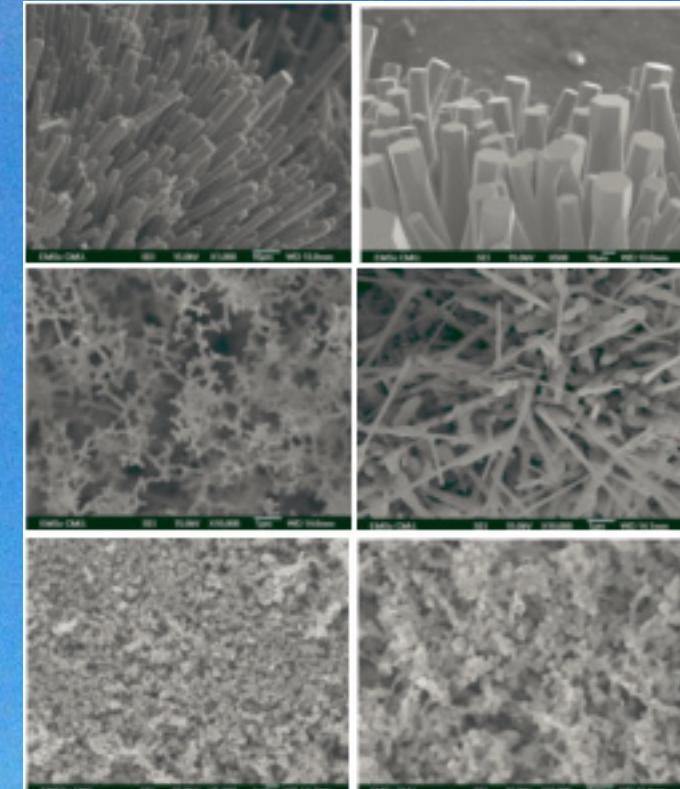


## CIGS Thin Film Solar Cells under I-V Testing



Dye-sensitized solar cell

Developing thin-film technology to capture the Sun's energy to produce electricity without pollution...anywhere.



ZnO Nanostructure for gas sensor and dye-sensitized solar cell



<http://www.thehеп-center.org>