



SOCIETY OF
PLASTICS ENGINEERS

SPE MISSION STATEMENT

It is SPE's mission to enhance
the scientific and technological knowledge
on polymers and plastics
within its network in the world-wide Plastics Industry





- Founded in 1942
- The only Global community for Plastics Professionals
- 18,500 members in 84 countries
- world-wide network
- Yearly 40 technology & business conferences
- and much more knowledge ...

Future trends in Plastics

“the age of interaction”

By

Wim De Vos



Future 'plastic' products will be

INTELLiGENT

&

CONNECTED







Parrot Pot

Intelligent Flower Pot



Intelligent Flower Pot



smart plastics in our households







interaction examples

Intelligent plastic containers will tell the owner how much product is still 'in stock'

Capturing weight differences



interaction examples

Intelligent plastic containers will tell the owner how much product is still 'in stock'

Capturing volume differences



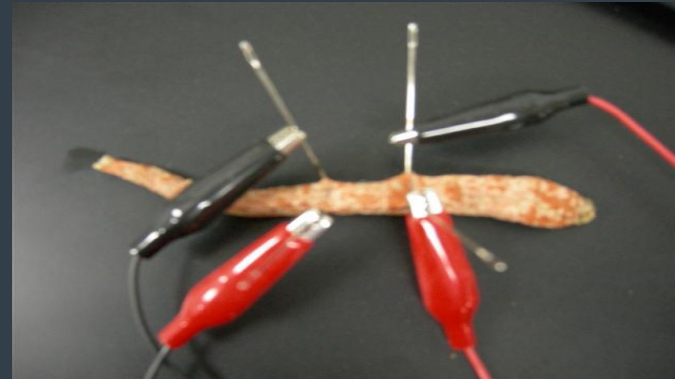
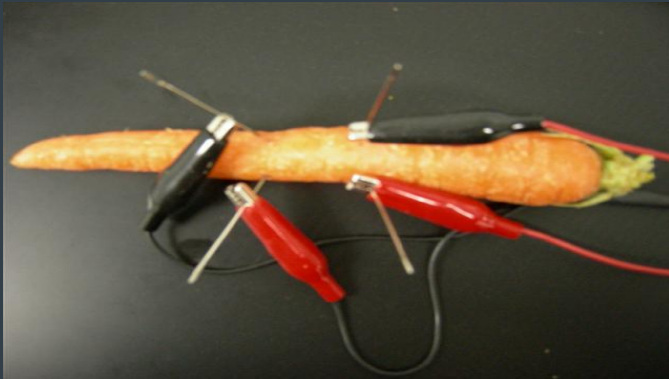
interaction examples

colour changing pigments in plastic packaging will enable the consumer / shop owner to detect if a packaging has been opened or if the food is about to be spoiled

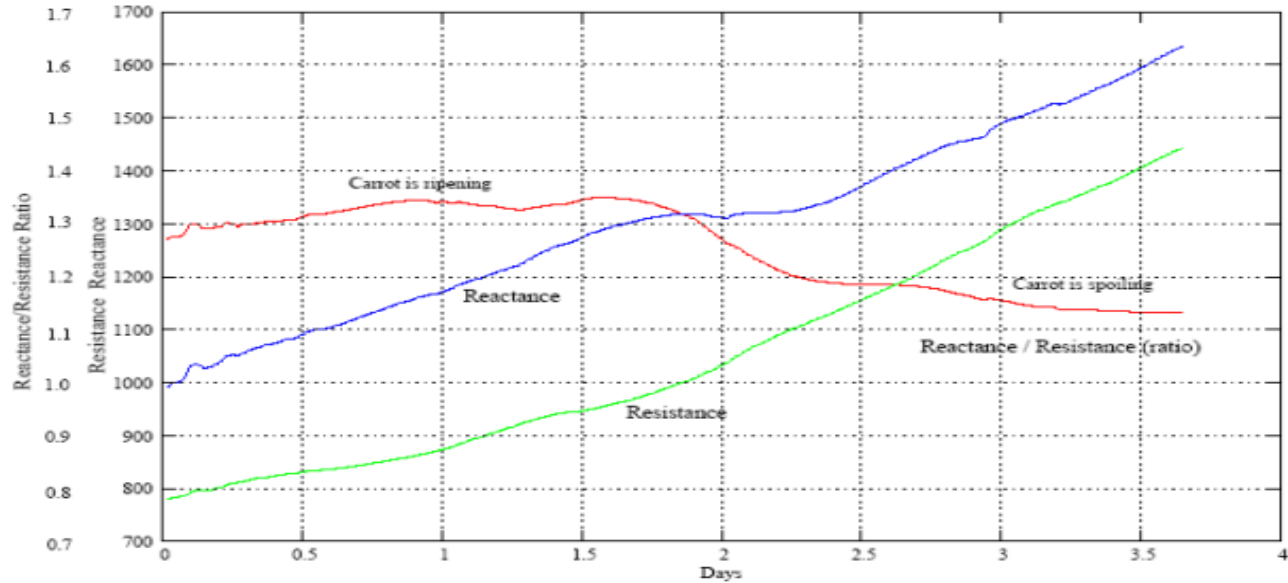


interaction examples

intelligent plastic food containers will inform the consumer that the food is about to be spoiled and needs to be eaten



interaction examples



Electrical Characteristics of a Carrot over time

interaction examples

fresh food



time to eat



spoiled

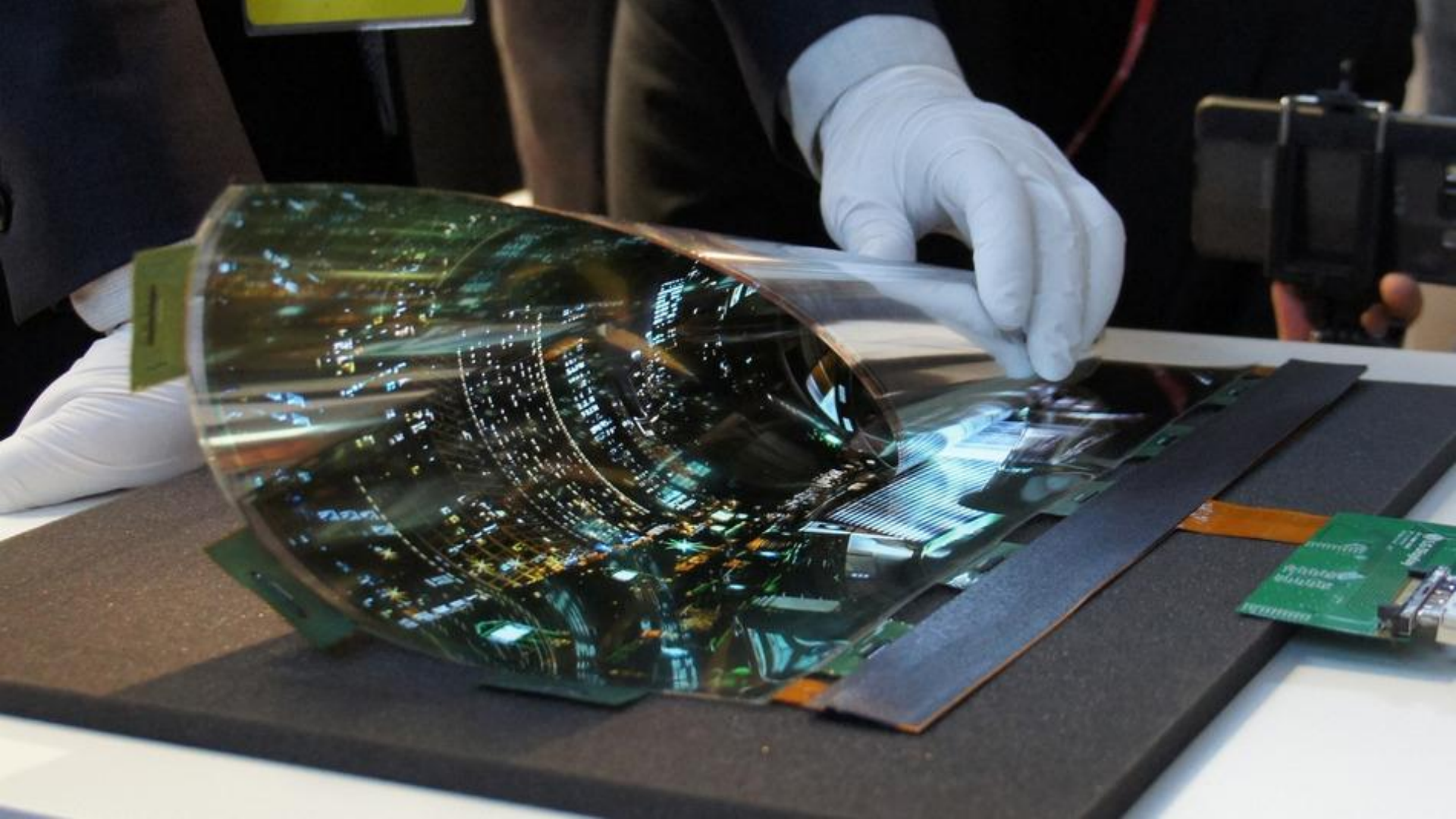


Conductive and colour changing polymers



A curved, cylindrical display panel is shown, likely a prototype for a rollable smartphone. The panel displays a vibrant cityscape at night, with numerous lights and a prominent pink light streak. The LG Display logo is visible on the upper right side of the panel. The panel is mounted on a black frame, and the background is a blurred indoor setting.

LG Display





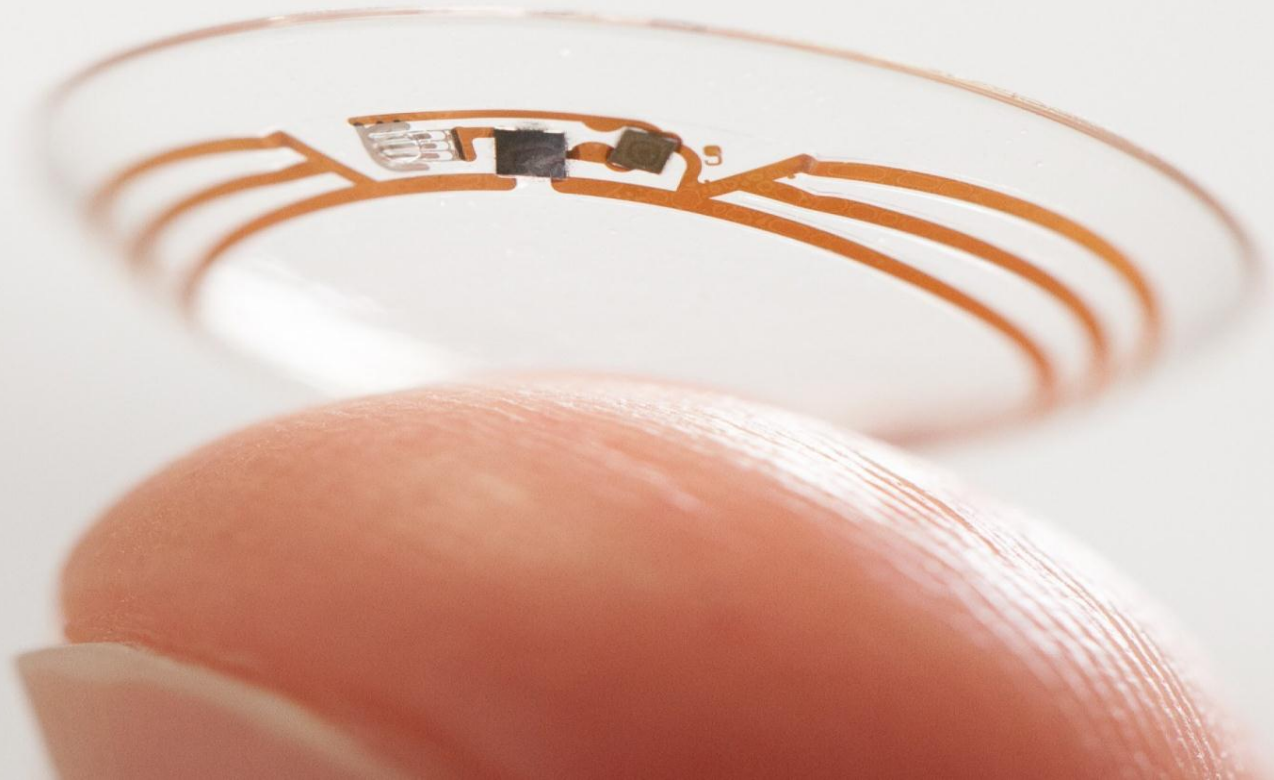
PLASTICS will enable new devices



PLASTICS will enable new INTERACTIVE devices



The **FUTURE** smartphone will be contact lens



Smart Shoe

Digitsole

Ties & unties

Illuminates

Heats

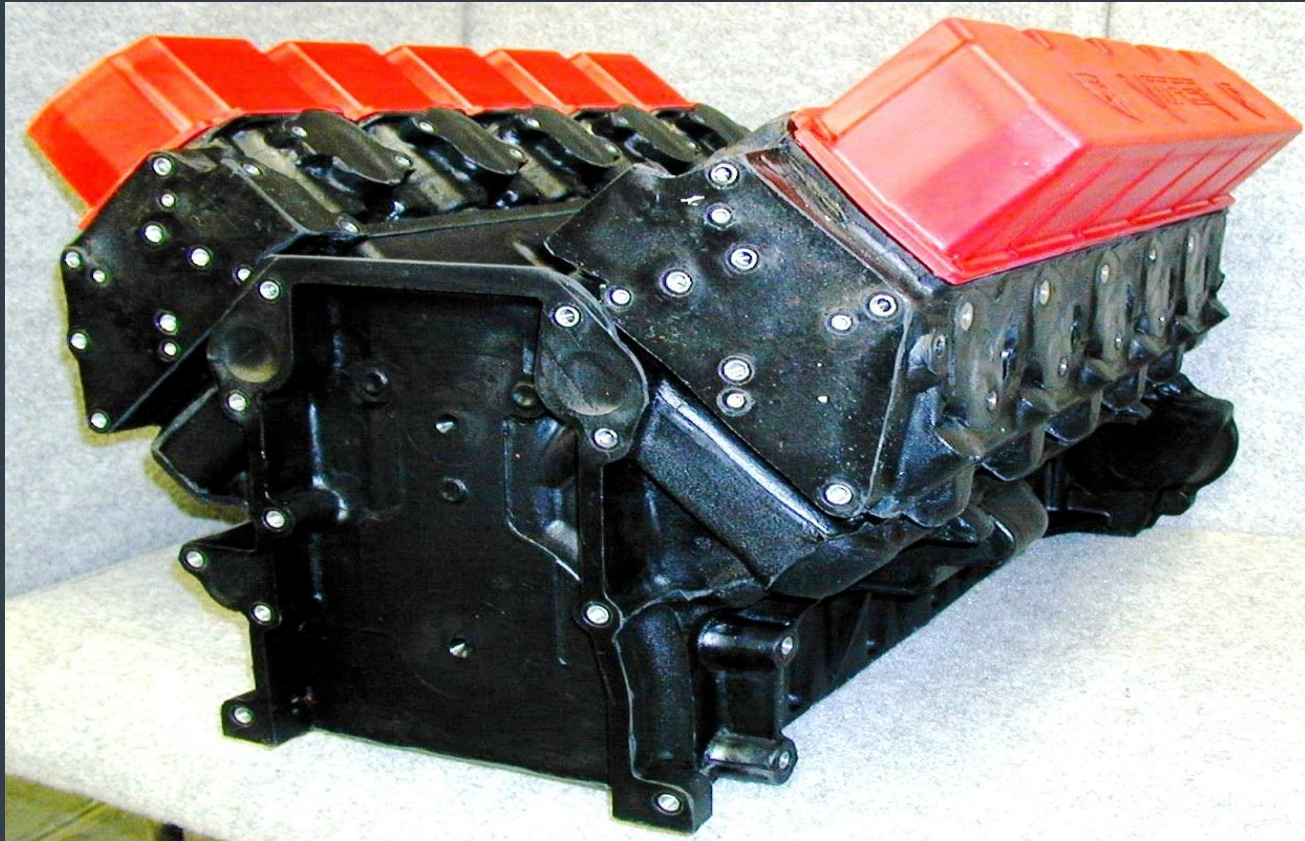
GPS

Calorie tracker

...



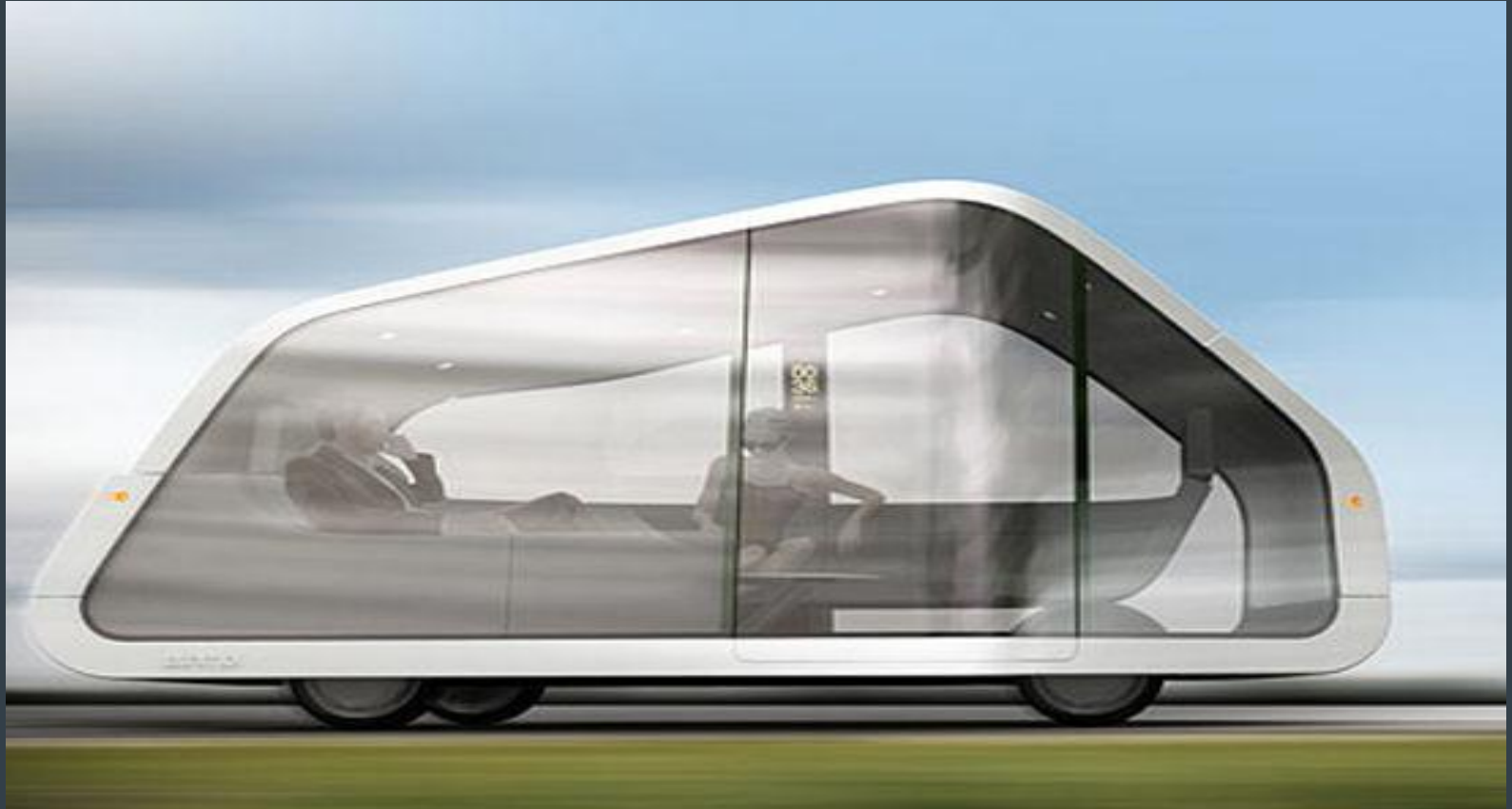
Plastic engine



the driverless car

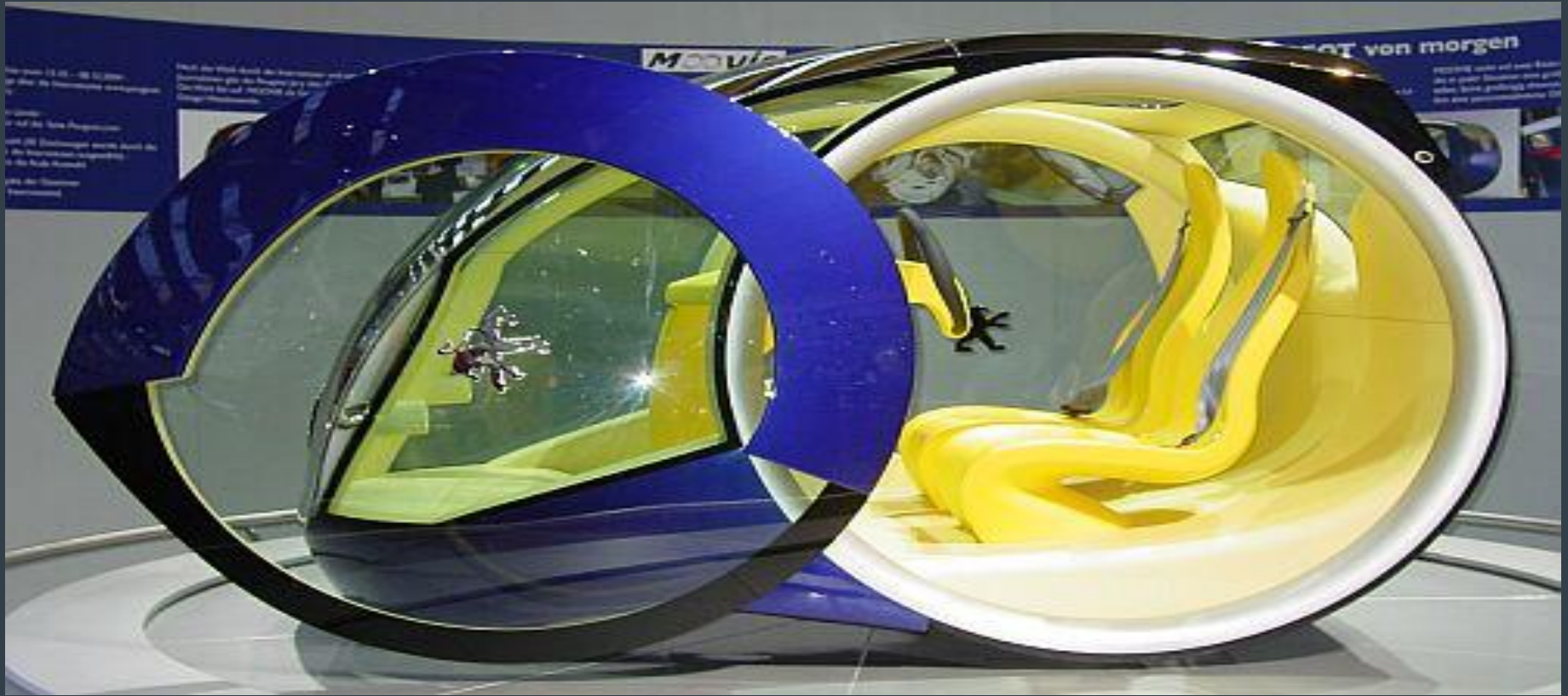


the driverless car



Urban mobility in the Future











Urban Mobility



Urban Mobility



Urban mobility

Bus seat_

The bike is folded into the bus seat for space and weight efficiency



Urban mobility

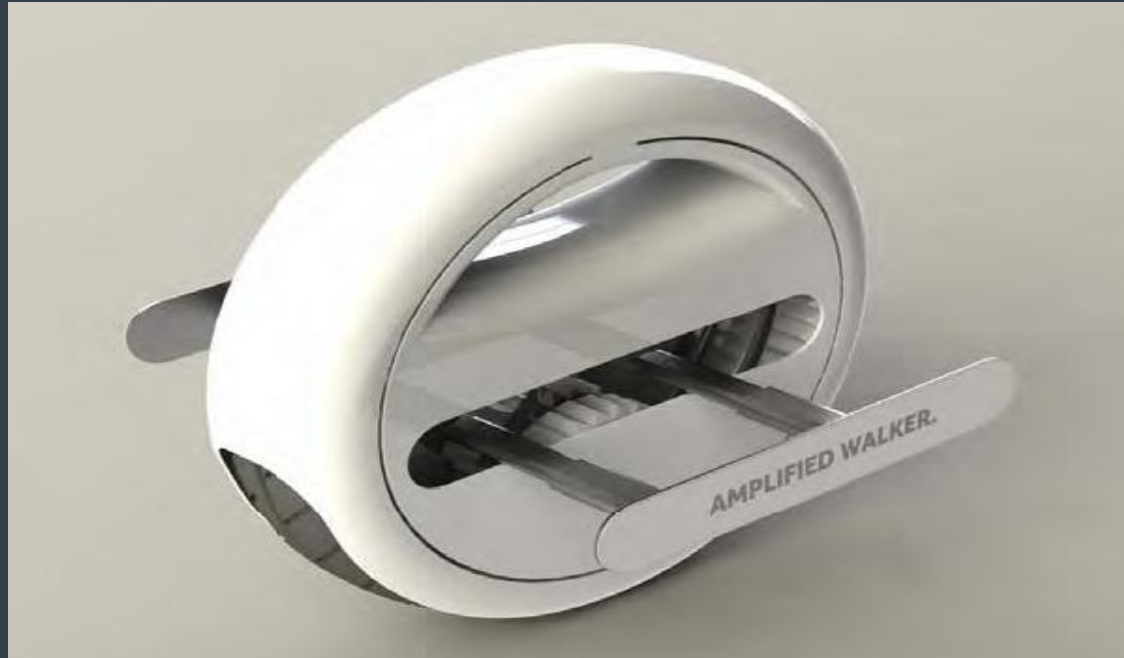




Wearable personal mobility



Urban mobility



Urban mobility



‘connected’
to our body

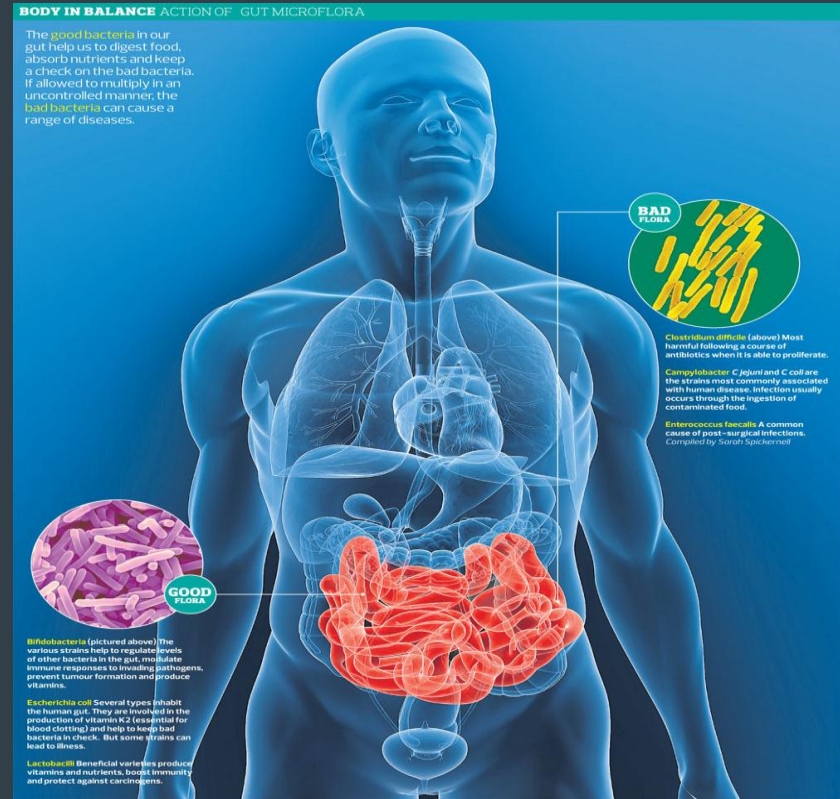


'interaction' within the body

Sensors based on
POLYMERS & PLASTICS
will be implanted in our
bodies and 'alert' us if we
are getting unhealthy

BODY IN BALANCE ACTION OF GUT MICROFLORA

The **good bacteria** in our gut help us to digest food, absorb nutrients and keep a check on the bad bacteria. If allowed to multiply in an uncontrolled manner, the **bad bacteria** can cause a range of diseases.



BAD FLORA

Clostridium difficile (above) Most harmful following a course of antibiotics when it is able to proliferate.

Campylobacter, *C. jejuni* and *C. coli* are the strains most commonly associated with human disease. Infection usually occurs through the ingestion of contaminated food.

Enterococcus faecalis A common cause of post-surgical infections.


Compiled by Sarah Spicknall

GOOD FLORA

Bifidobacteria (pictured above) The various strains help to regulate levels of other bacteria in the gut, modulate immune responses to invading pathogens, prevent tumour formation and produce vitamins.

Escherichia coli Several types inhabit the human gut. They are involved in the production of vitamin K2 (essential for blood clotting) and help to keep bad bacteria in check. But some strains can lead to illness.

Lactobacilli Beneficial varieties produce vitamins and nutrients, boost immunity and protect against carcinogens.

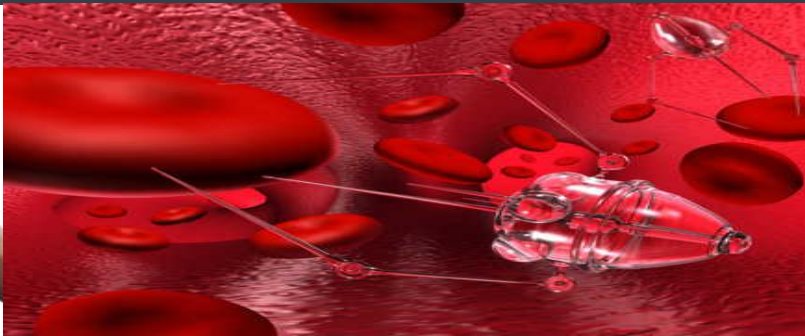


Healthcare

Could polymers 'interact' with our human body to cure?

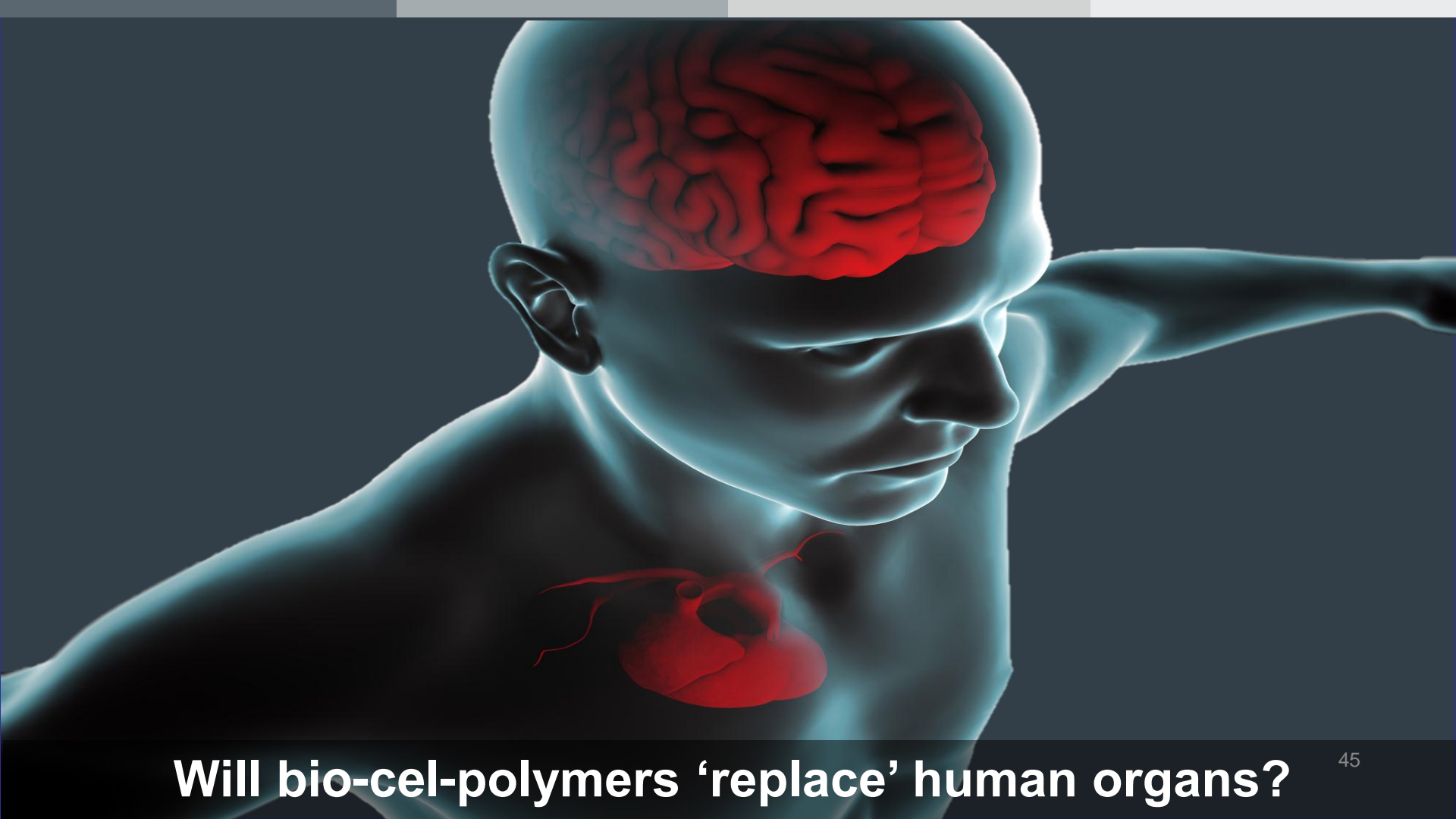
➤ Self healing polymers

➤ Artificial plastic blood



NewScientist

Light fixes smart plastic



Will bio-cel-polymers ‘replace’ human organs?

Polymers for the future

Engineering plastics

Composite plastics

Thermoplastic elastomers

CONDUCTIVE POLYMERS

COLOUR CHANGING PLASTICS

SELF HEALING POLYMERS

3D PRINTABLE POLYMERS

- 
- Different materials ↑
 - Combined & complex mix ↑
 - Additives ↑
 - Process difference ↑
 - Special properties ↑



'Unfortunately'

Comfort comes before sustainability

Engineers first want to innovate, be better, stronger, lighter, cheaper,... and if @ all possible better for the environment.



conclusions



Conclusions

plastics & polymers remain the material
for the future

The 'reflex' of designing for recyclability
needs to become our second nature ...
but the way is still long...



Conclusions

Therefore conference like this
are an absolute must

