

MATERIABILITY LIBERATING SMART MATERIALS

Material Xperience 2014

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materiability research network
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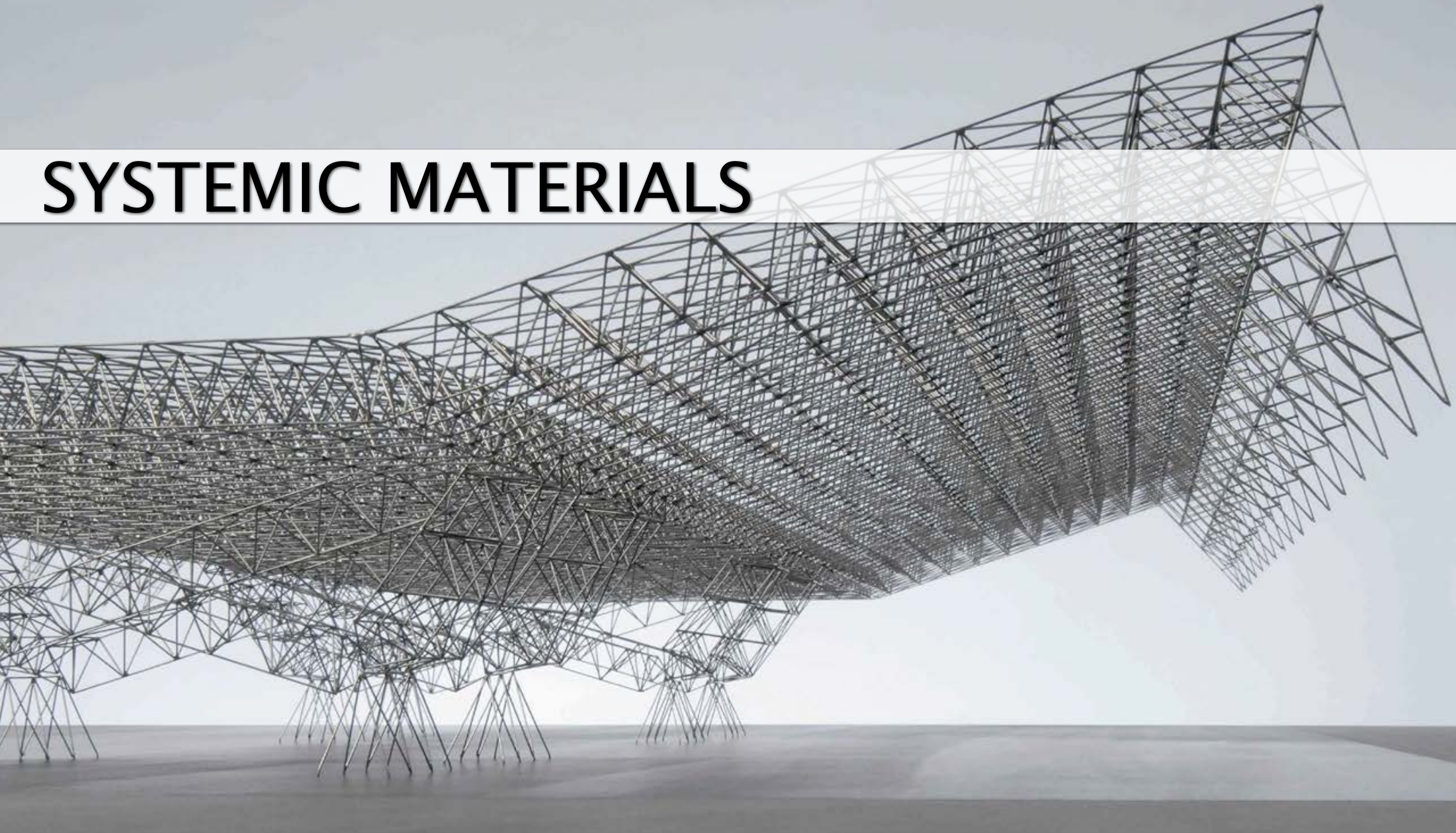
NATURAL MATERIALS



The image shows the interior of the Pantheon in Rome, focusing on the dome and a circular oculus. The dome is covered in a grid of coffered panels, and a bright light streams through the oculus, creating a dramatic effect. A white horizontal band across the middle of the image contains the text "FORM FOLLOWS INTELLECT".

FORM FOLLOWS INTELLECT

SYSTEMIC MATERIALS

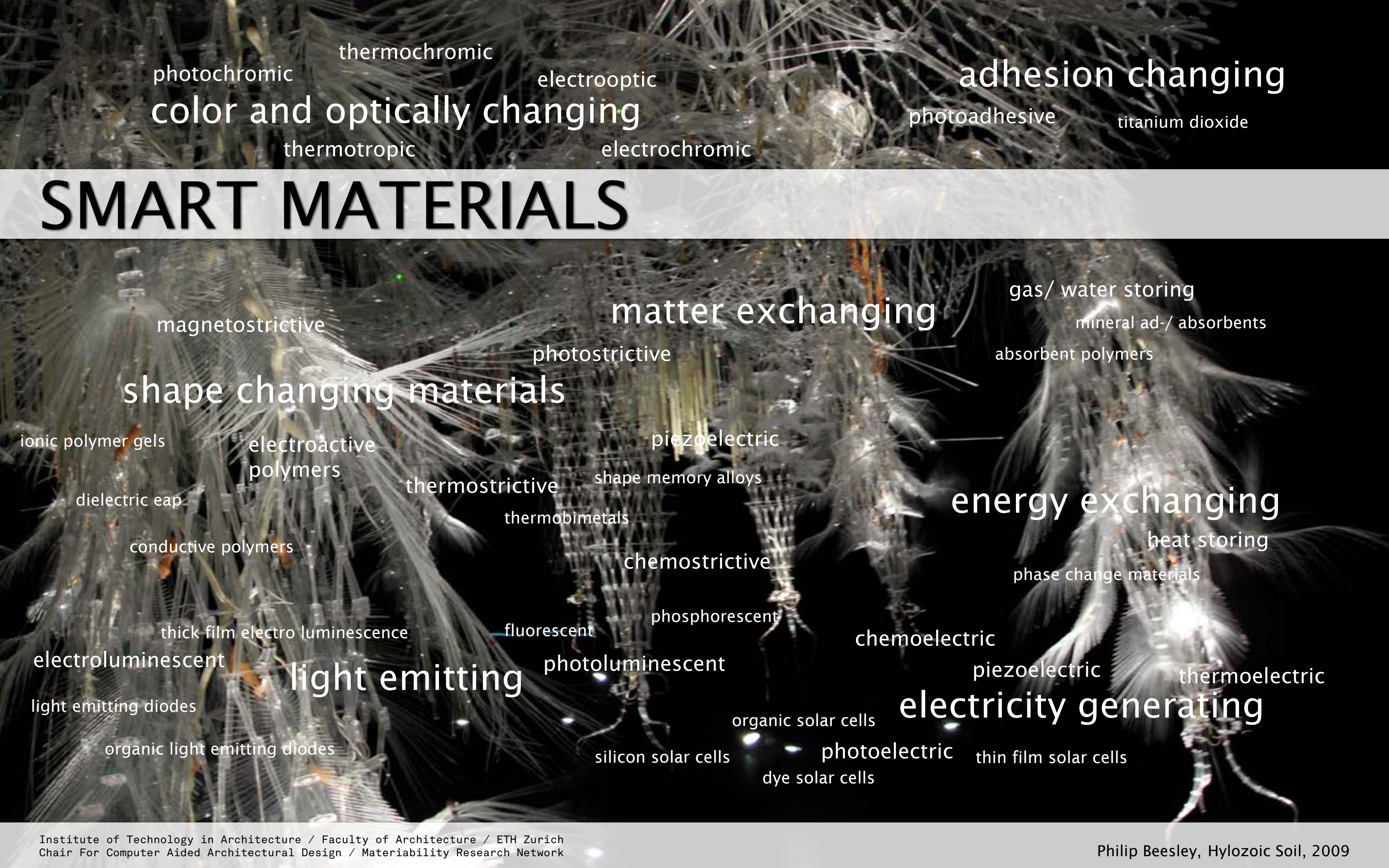


SYNTHETIC MATERIALS

The image displays a variety of synthetic material pellets, likely used in 3D printing or manufacturing. The pellets are arranged in a row, showing different colors and textures. From left to right, the colors include black, grey, teal, green, white, red, and brown. The pellets in the foreground are more sharply focused, while those in the background are blurred, creating a sense of depth. The overall appearance is that of a diverse range of synthetic materials.

DIGITAL MATERIALS





photochromic
thermochromic
color and optically changing
thermotropic
electrooptic
electrochromic

adhesion changing
photoadhesive
titanium dioxide

SMART MATERIALS

magnetostrictive
shape changing materials
photostrictive
matter exchanging

gas/ water storing
mineral ad-/ absorbents
absorbent polymers

ionic polymer gels
dielectric eap
conductive polymers
electroactive polymers
thermostrictive
thermobimetals
piezoelectric
shape memory alloys
chemostrictive

energy exchanging
heat storing
phase change materials

thick film electro luminescence
electroluminescent
light emitting diodes
organic light emitting diodes
fluorescent
photoluminescent
silicon solar cells

chemoelectric
piezoelectric
thermoelectric
electricity generating

organic solar cells
photoelectric
dye solar cells
thin film solar cells

MATERIABILITY.COM



Resinace 2.0
projects



Resinace
projects



Microbial Home
projects



Aerogel
tutorials



Algae Photo-Bioreactor
tutorials



Thermochromic Plastic
tutorials



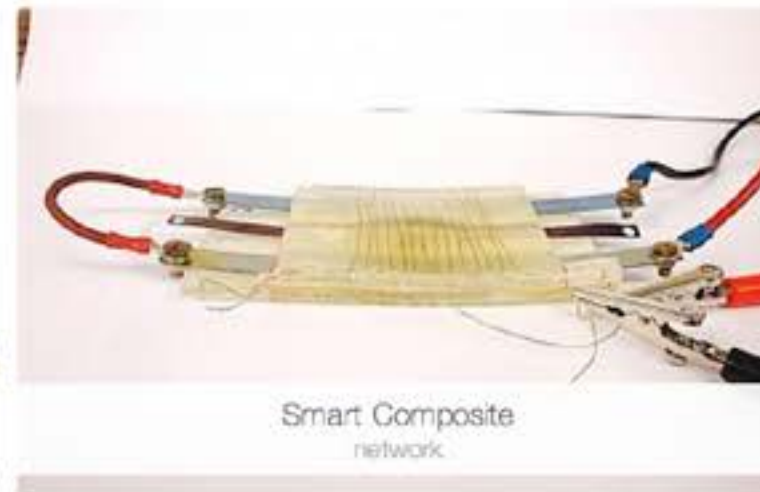
Electroactive Polymer Fabrication
tutorials



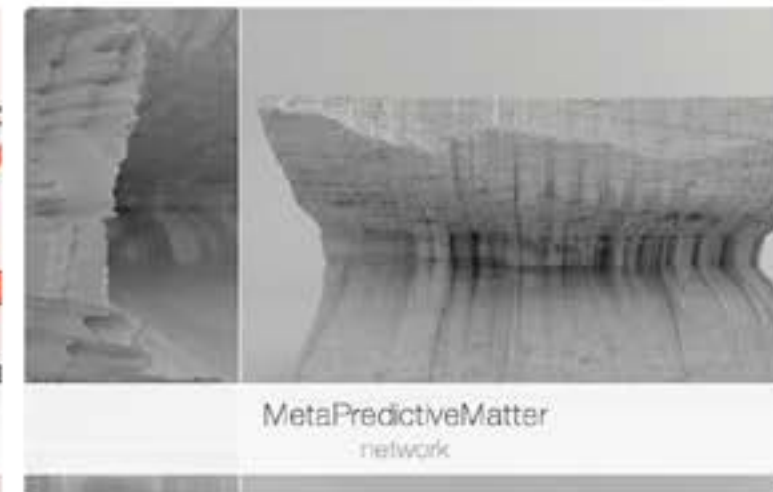
Bioluminescent Algae
tutorials



Groundfloor
network



Smart Composite
network



MetaPredictiveMatter
network



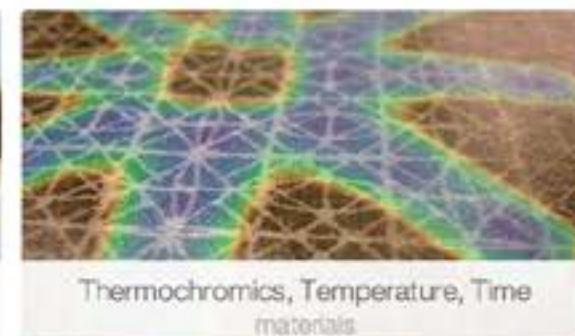
Dye-sensitized Solar Cells
materials



Electroluminescent Displays
materials

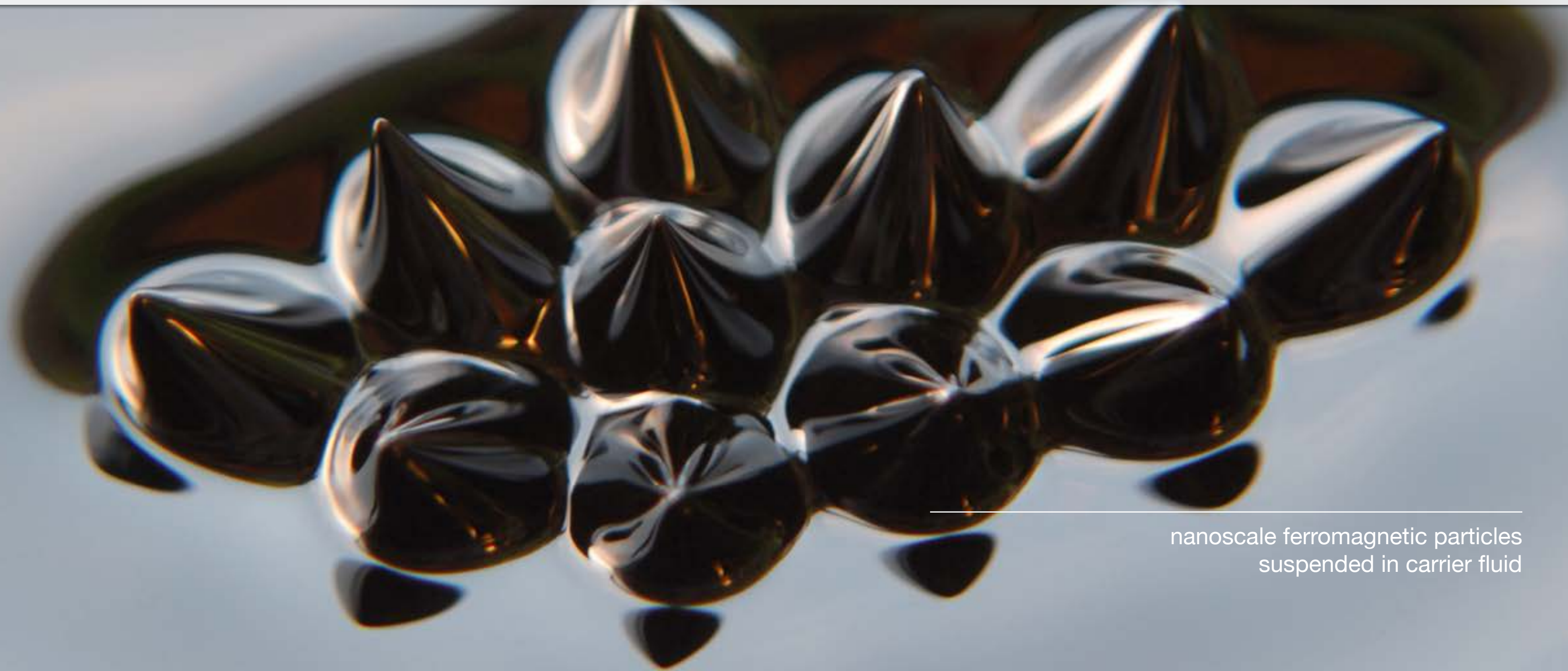


Ferrofluids
materials



Thermochromics, Temperature, Time
materials

FERROFLUIDS



nanoscale ferromagnetic particles
suspended in carrier fluid

BIOPLASTICS

gelatine / glycerin based bioplastic

aerated to form 3-dimensional structure

biodegradable and largely
carbon neutral

AEROGELS

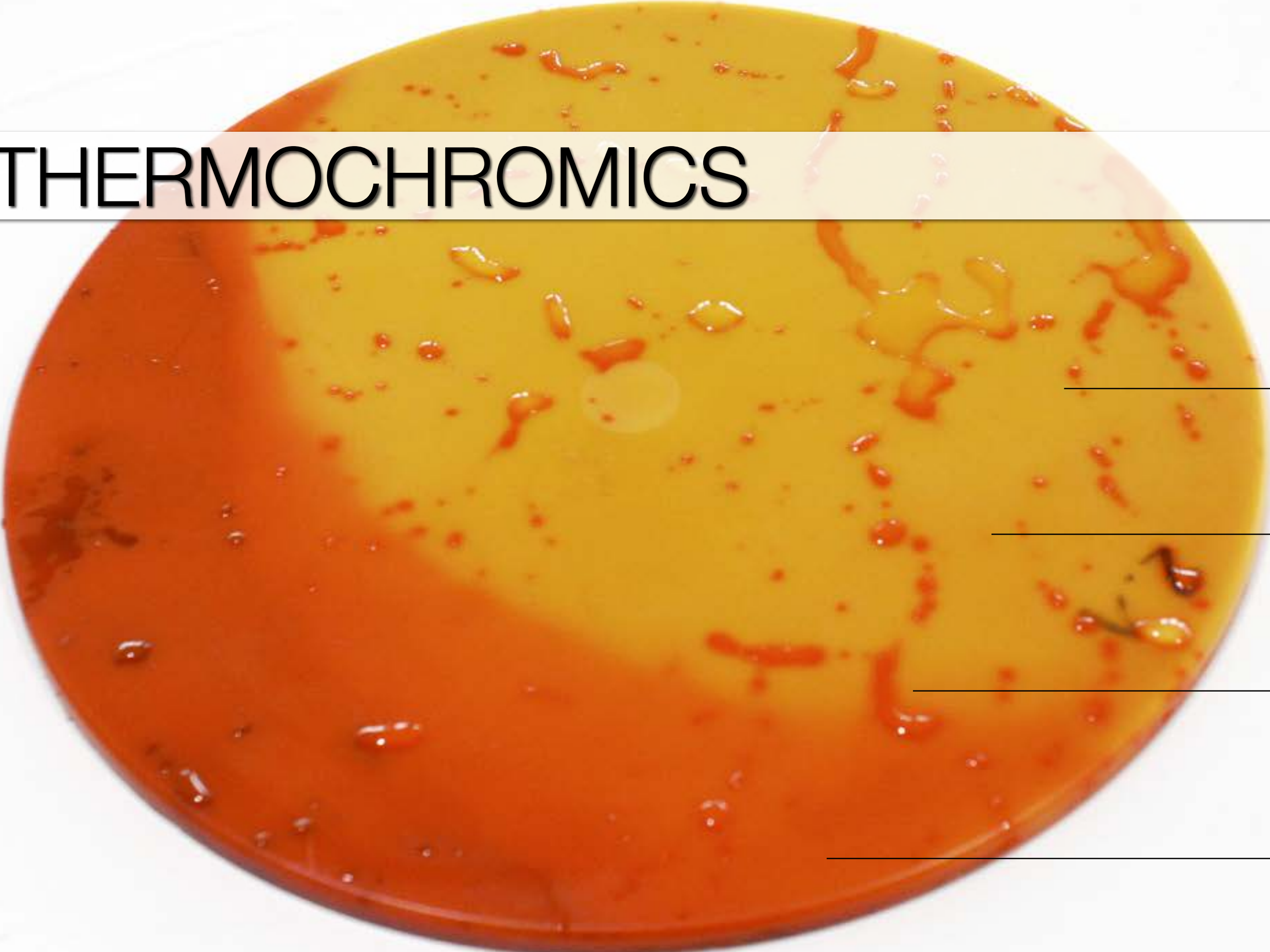


silica based aerogel

weight: 3mg / cm²

cracks due to dendritic
microstructure

THERMOCHROMICS



thermochromic pigments
in polyester resin

warm activation color (yellow)

transition color (orange)

cool activation color (red)



power connections

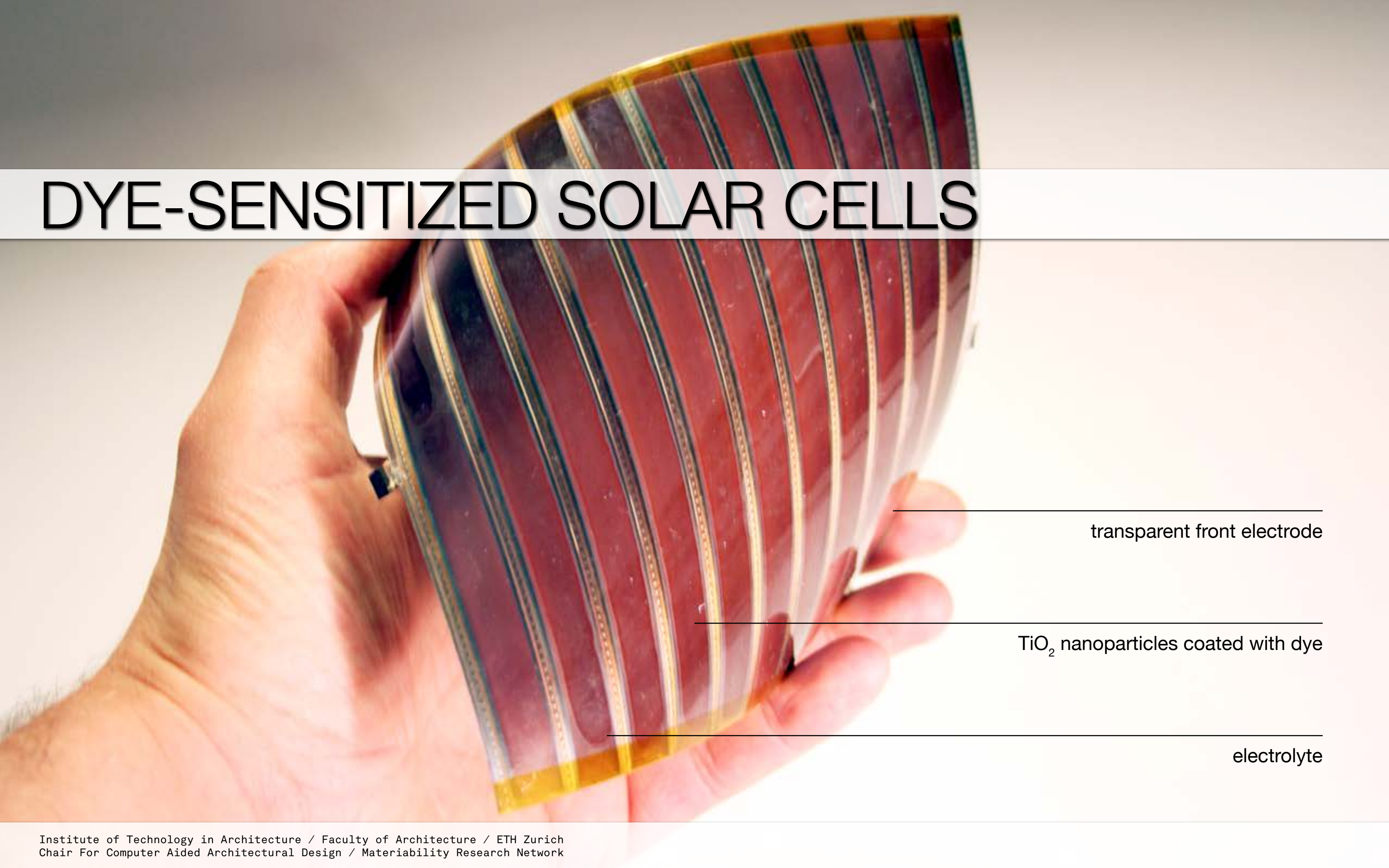
ELECTROLUMINESCENT DISPLAYS

transparent front
electrode

white phosphor

silver rear electrode

DYE-SENSITIZED SOLAR CELLS



transparent front electrode

TiO₂ nanoparticles coated with dye

electrolyte

ALGAE PHOTO BIOREACTORS

growth solution

planktonic microalgae

10g / biomass / m² / day

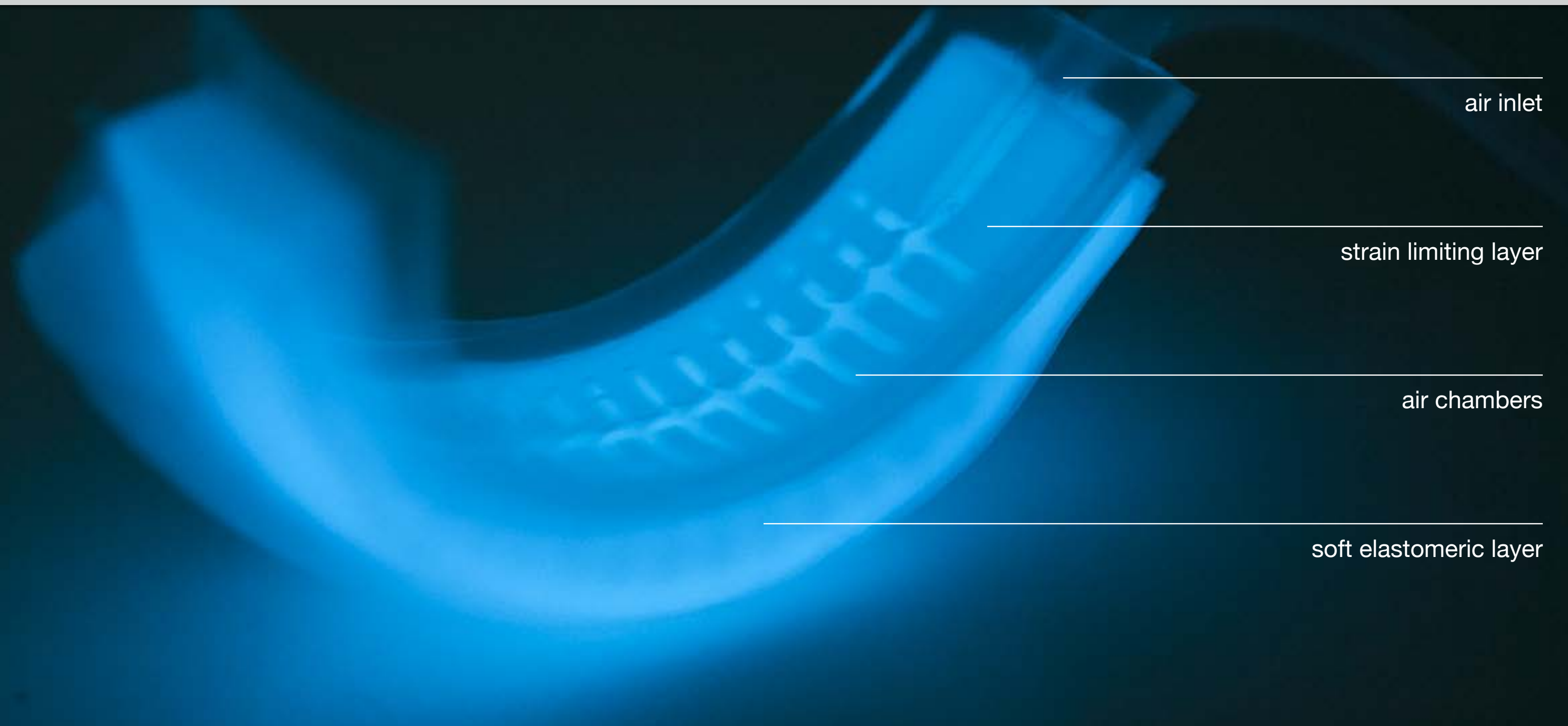
BIOLUMINESCENT ALGAE

A hand is shown holding a clear petri dish containing a glowing green liquid. The background is dark, making the green glow stand out. The text 'BIOLUMINESCENT ALGAE' is overlaid at the top in a white box.

dinoflagellates in salt water solution

visible production of light through
biochemical reaction

SOFT ROBOTS



ELECTROACTIVE POLYMERS



electrical connection

elastic membrane

polycarbonate frame

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