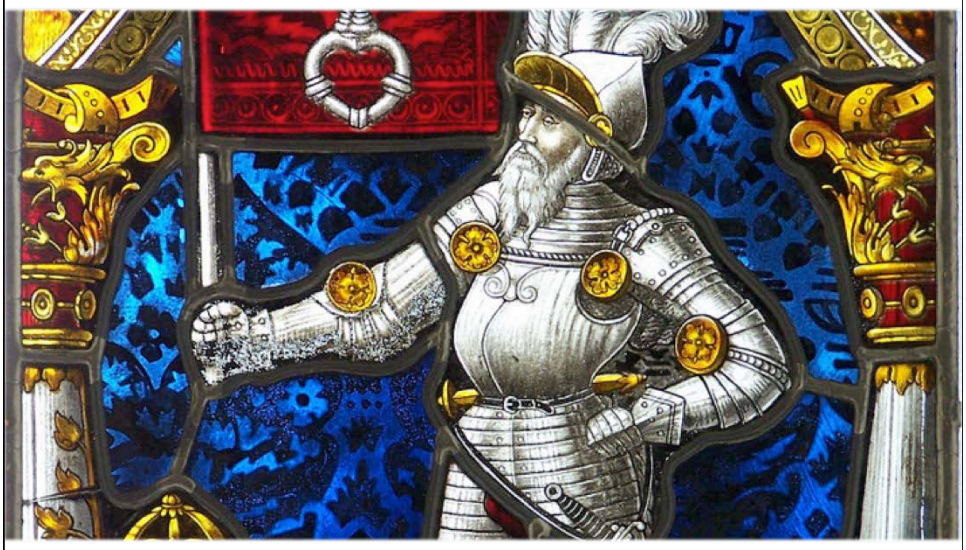
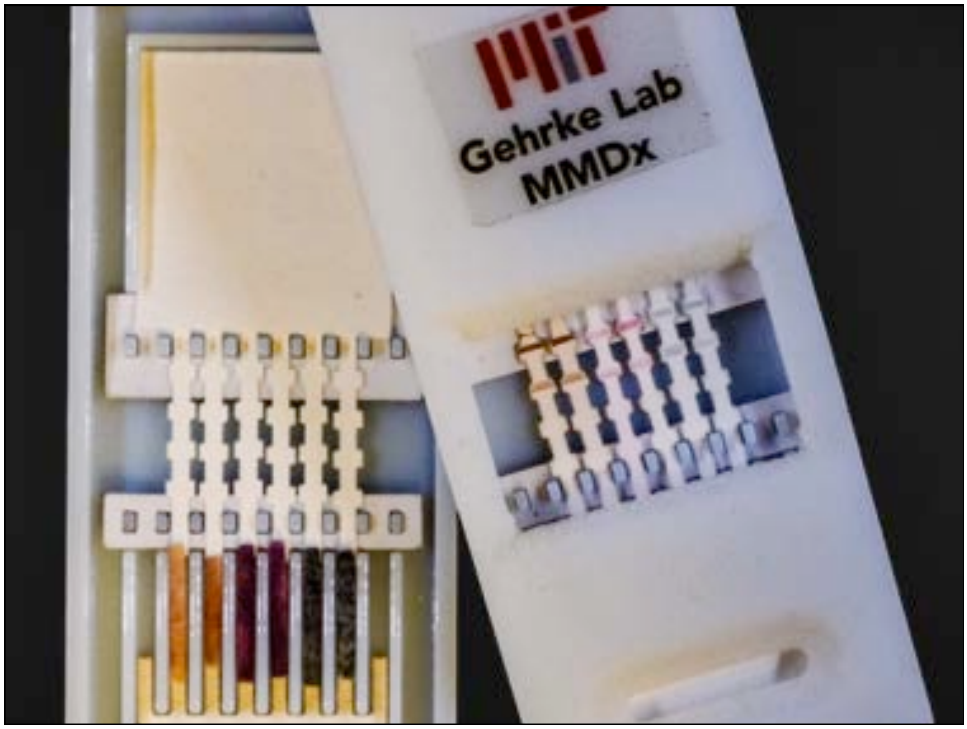
Future will be Measured in nanometers

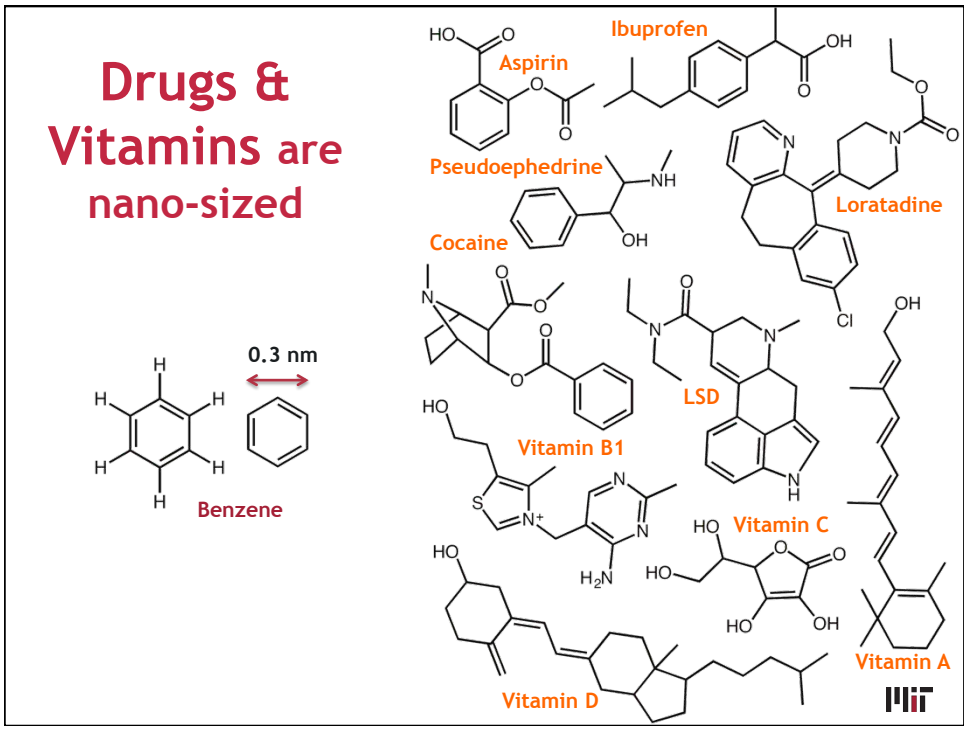
At nanoscale Gold and Silver, don't look like Gold and Silver

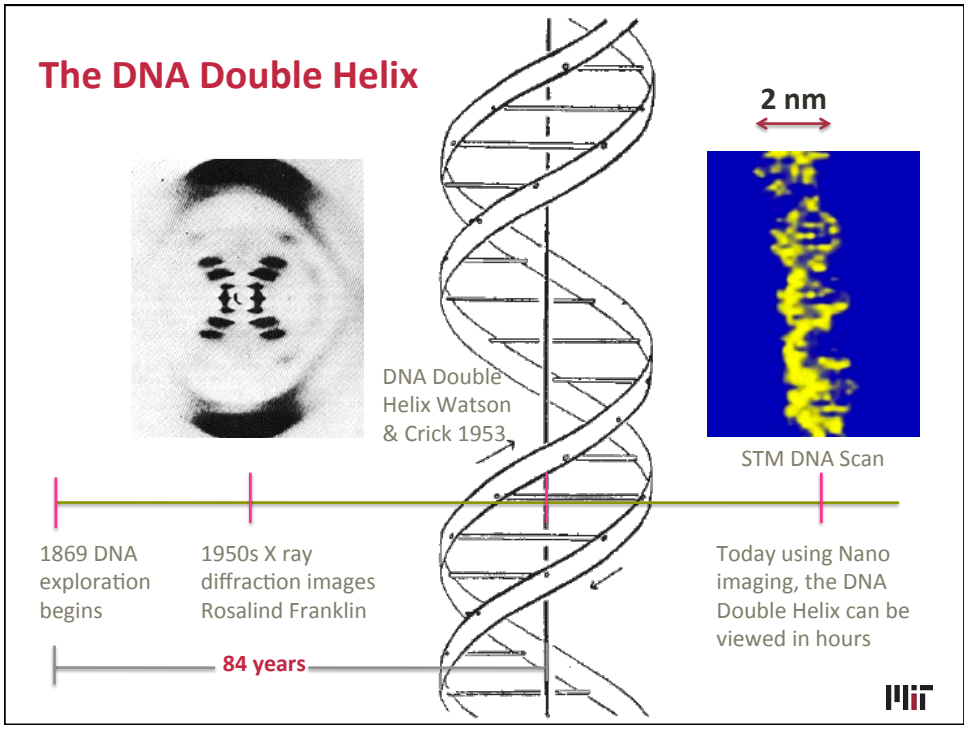
"Nanotechnologists" in the Middle Ages used Gold and Silver nanoparticles to color windows

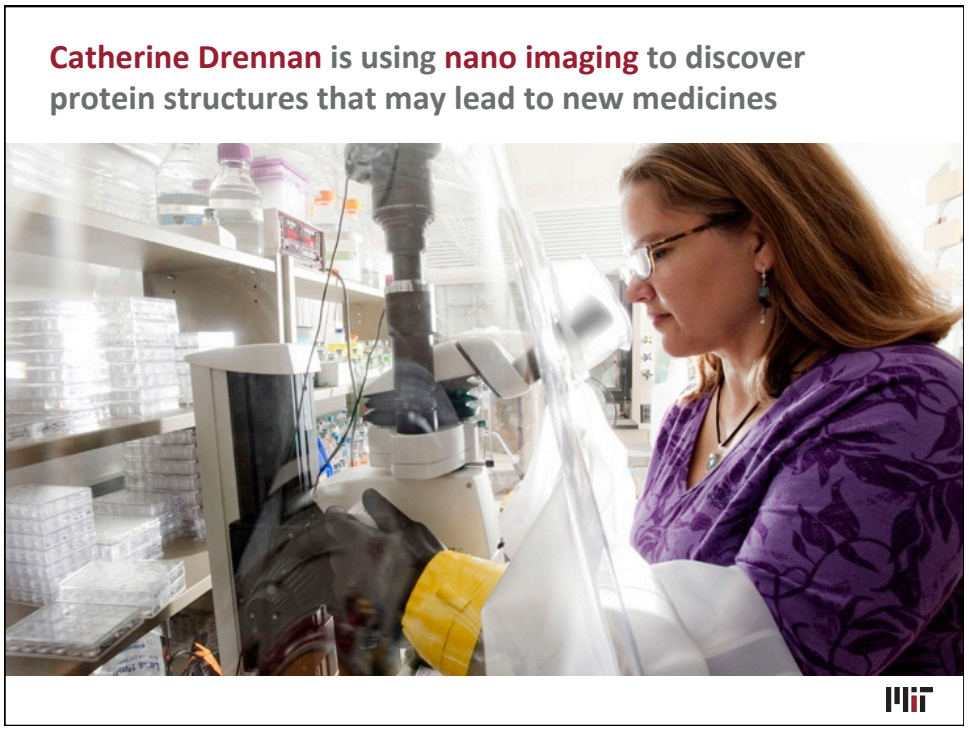


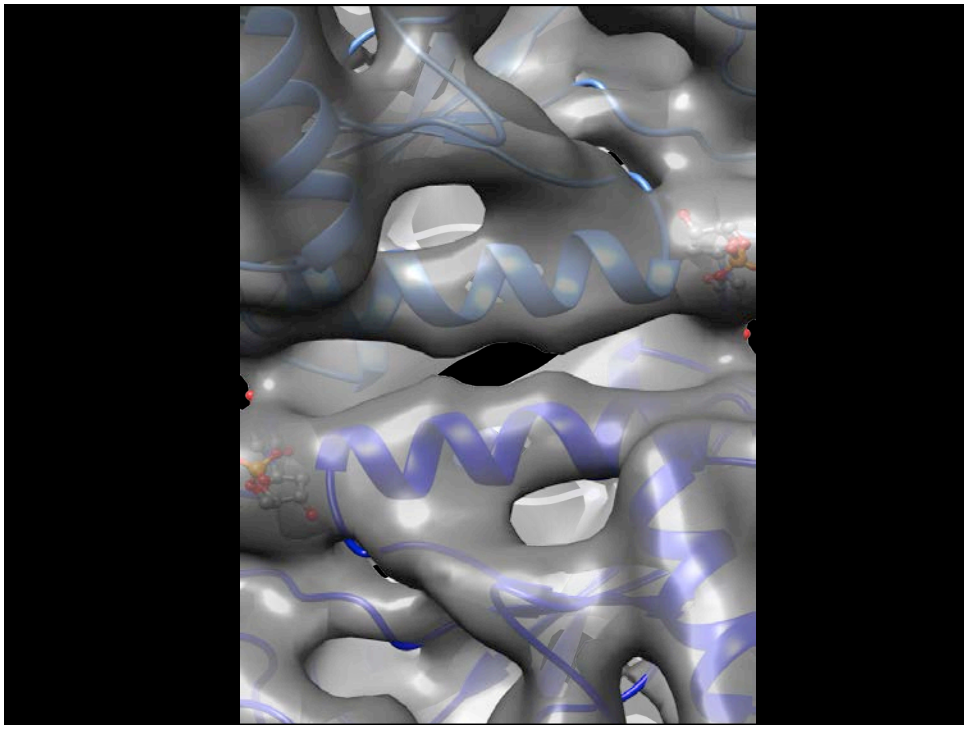
Lee Gehrke in 2015 used Silver nanoparticles to accelerate detection of Ebola, West Nile, and Dengue

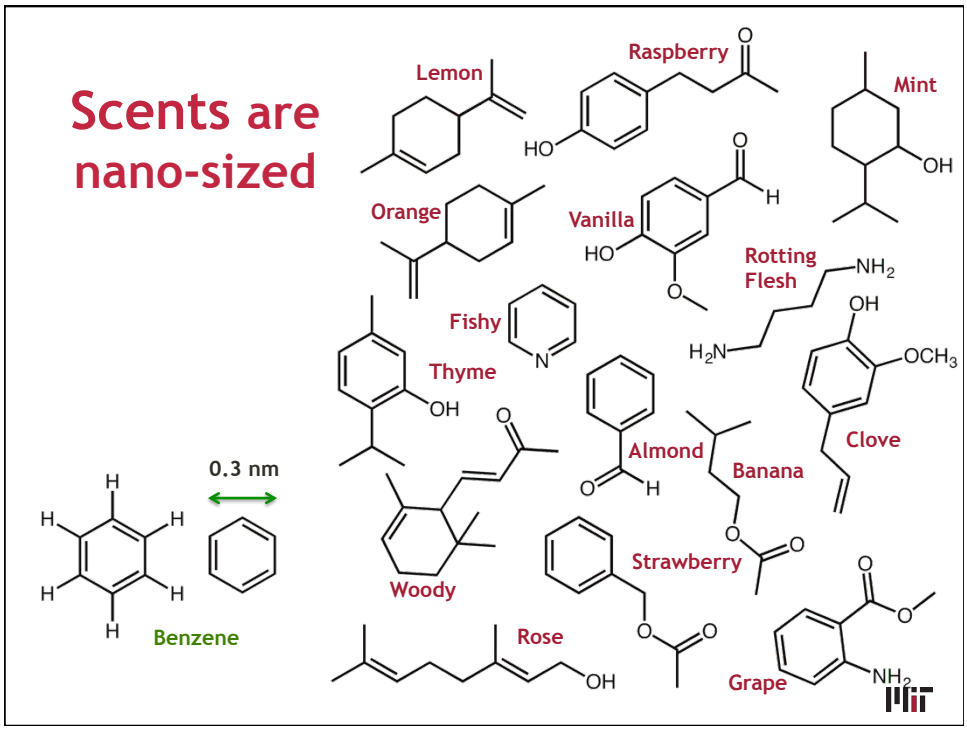

Gehrke Lab
MMDx


Drugs & Vitamins are nano-sized
0.3 nm
Benzene
Aspirin
Ibuprofen
Pseudoephedrine
Loratadine
Cocaine
LSD
Vitamin B1
Vitamin C
Vitamin A
Vitamin D

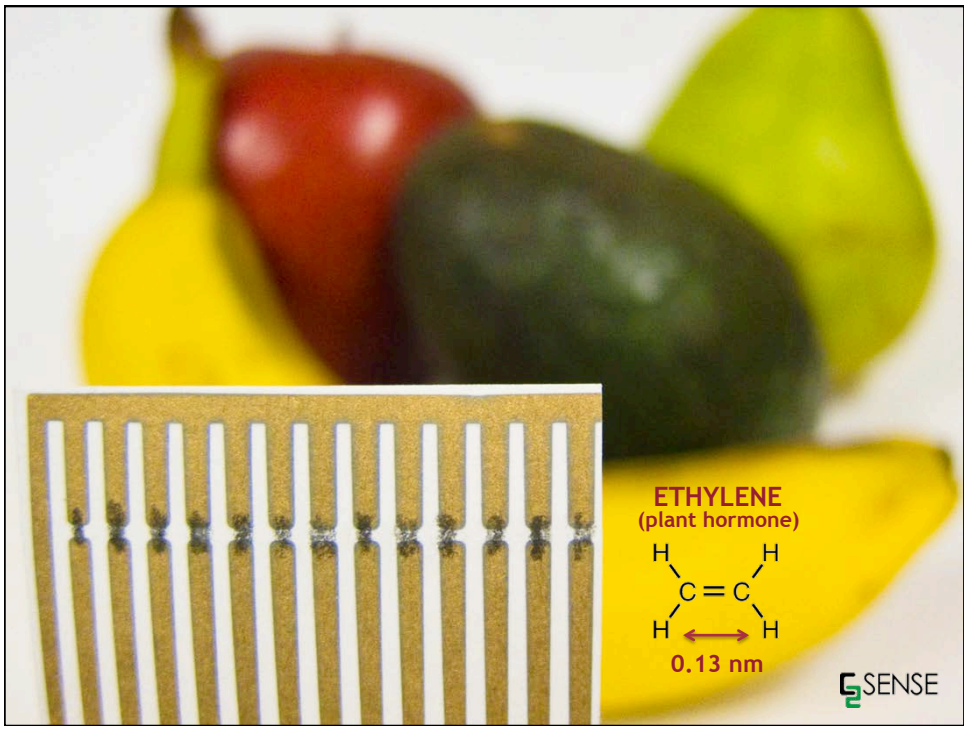

The DNA Double Helix
2 nm
DNA Double Helix Watson & Crick 1953
STM DNA Scan
1869 DNA exploration begins
1950s X ray diffraction images Rosalind Franklin
84 years
Today using Nano imaging, the DNA Double Helix can be viewed in hours


Catherine Drennan is using nano imaging to discover protein structures that may lead to new medicines

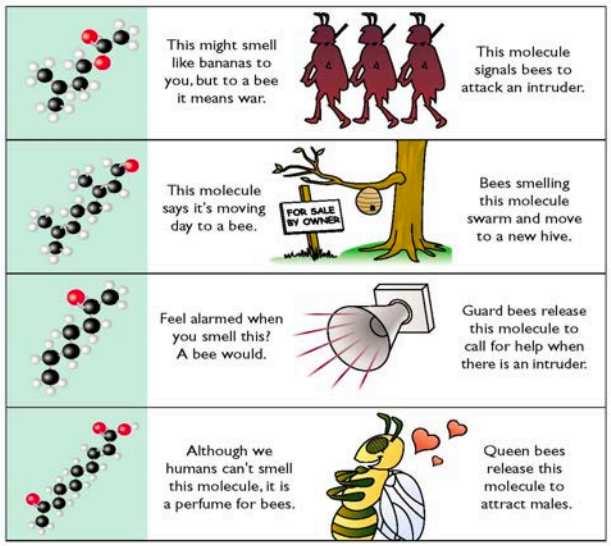



Scents are nano-sized
Lemon
Raspberry
Mint
Orange
Vanilla
Rotting Flesh
Fishy
Thyme
Almond
Banana
Clove
Woody
Strawberry
Rose
Grape
0.3 nm
Benzene

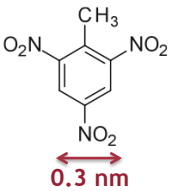
Timothy Swager is developing gas sensors using **nanoscale properties of matter** to save food, life, and limb



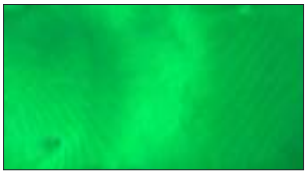
Pheromones
are nano-sized … just ask Bees

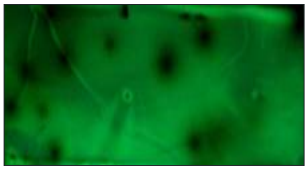


Graphic from http://www.ingridscience.ca/



0.3 nm





BEFORE TNT AFTER TNT

Colorants are nano-sized

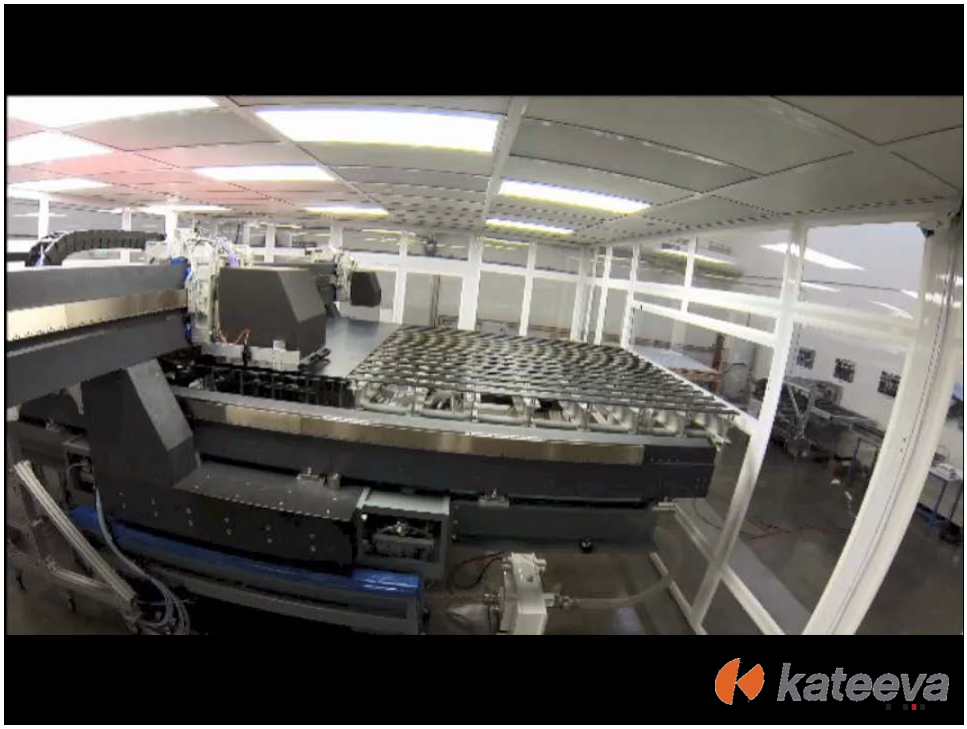
images from wikipedia.com

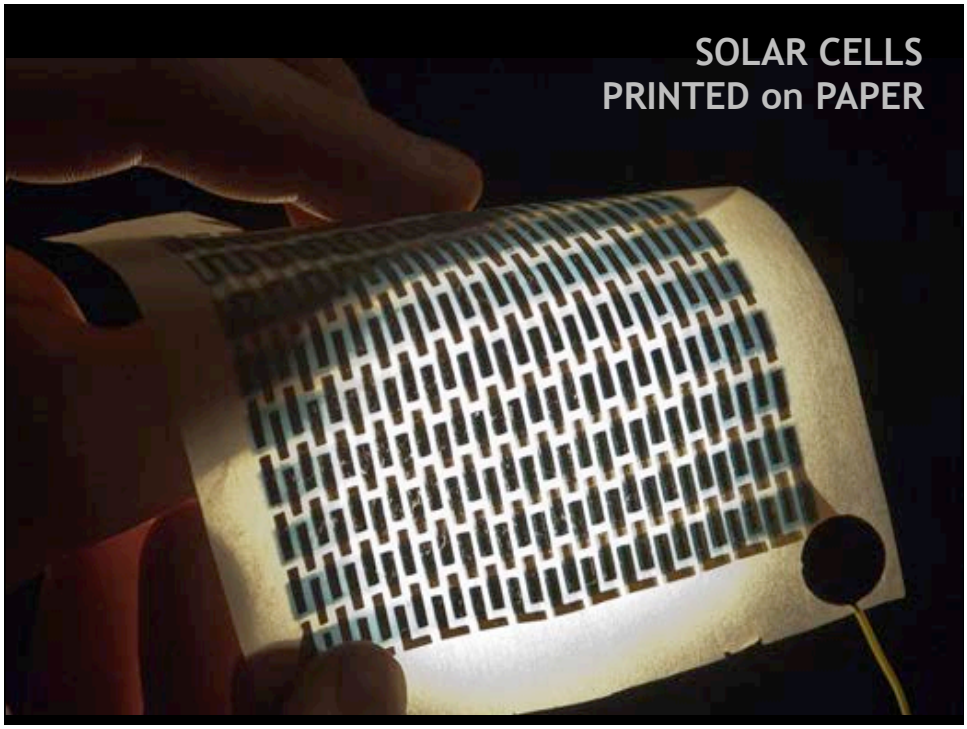
pigments → MOLECULES

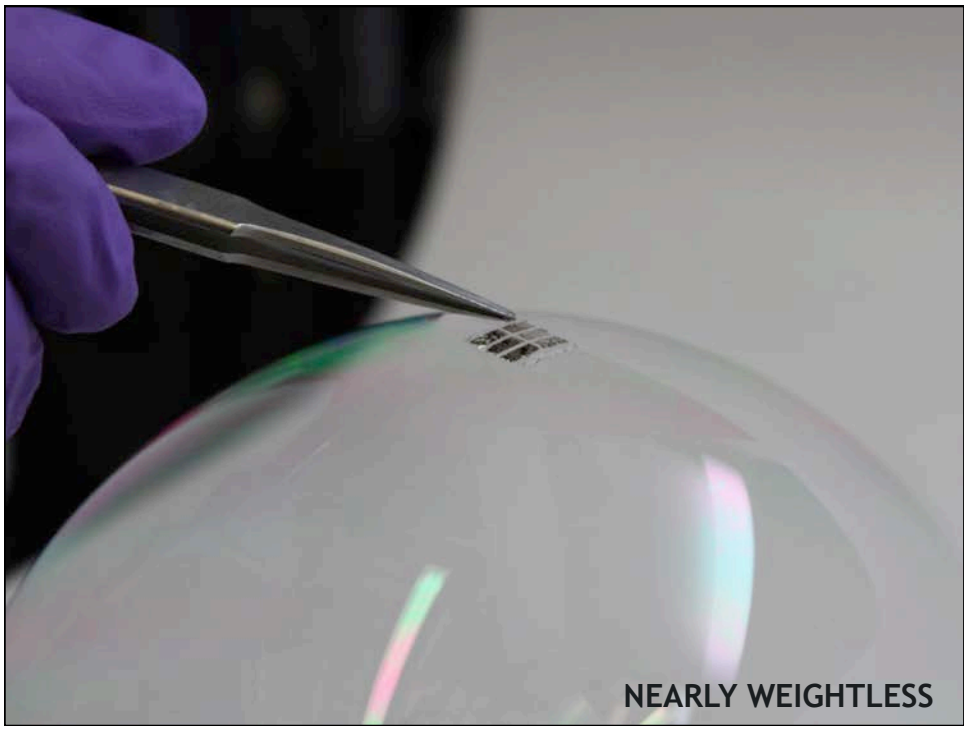
stained glass → NANOPARTICLES


Colorants are nano-sized
Crystal Violet
0.3 nm
Benzene
2(3HC)N
Victoria Blue
Methyl Orange
NH(C2H5)
Alizarin Red 11


Kateeva's YIELDjet™ Platform
kateeva
Gen8 In-House Demo System Shown


kateeva

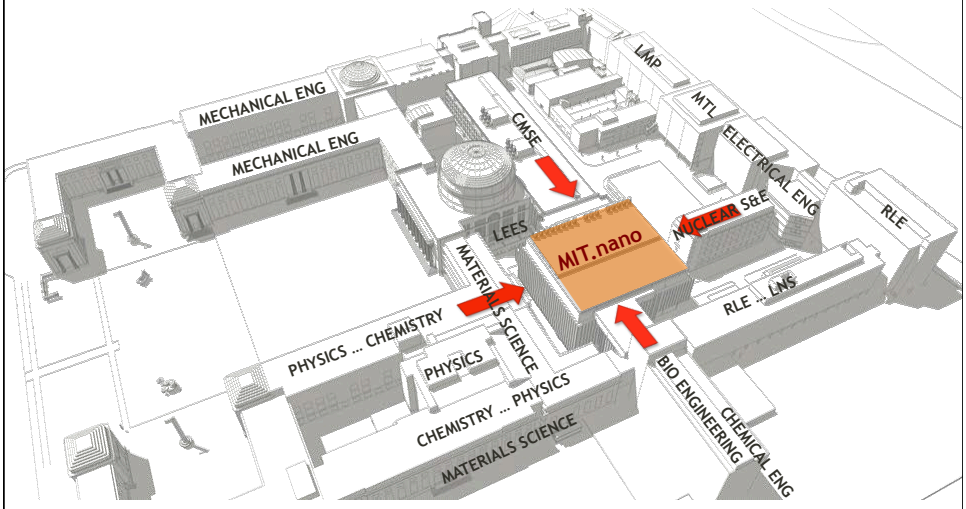

SOLAR CELLS
PRINTED on PAPER


NEARLY WEIGHTLESS


106.4
NEARLY INVISIBLE


ubiquitous
energy

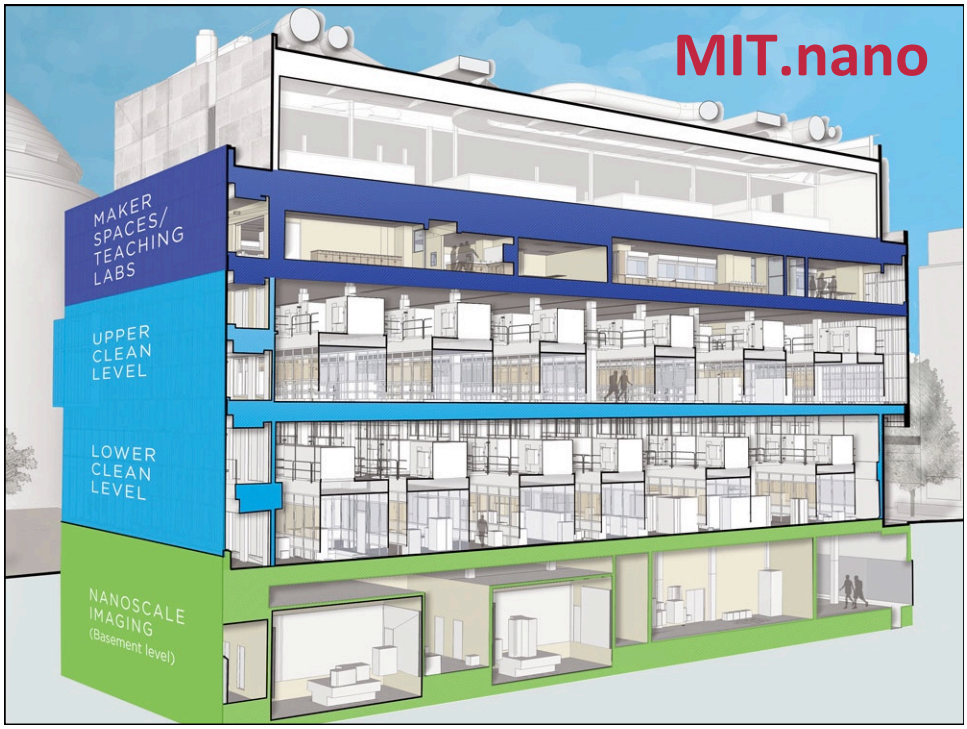
MIT.nano at the Center of MIT



DOUBLING SHARED FABRICATION AND IMAGING CAPABILITIES,
INCREASING OPPORTUNITIES FOR CROSS-DISCIPLINARY
INTERACTIONS OF 2000+ USERS

NANOSCALE WILL DEFINE MANY FUTURE DISCOVERIES

51% of the recently tenured SOS faculty
67% of the recently tenured SOE faculty will benefit


MIT.nano
MAKER SPACES/ TEACHING LABS
UPPER CLEAN LEVEL
LOWER CLEAN LEVEL
NANOSCALE IMAGING
(Basement level)


Use MIT.nano tools to empower artists

Nanotechnology in Action

for "disruptive technologies" that will reimagine:

- **Medicine and Lifesciences**
- **Energy Systems**
- **Computing and Information**
- **Manufacturing**
- **Materials and Structures**
- **Quantum Science and Technology**
- **Education**

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