

VI International Congress Synesthesia, Science & Arte

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# **The Nature of Nano – How can we sense a tiny little World**

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# **Too small to see – too many to ignore**

**between bulk and molecule**

**quantum science: neither wave nor particle**

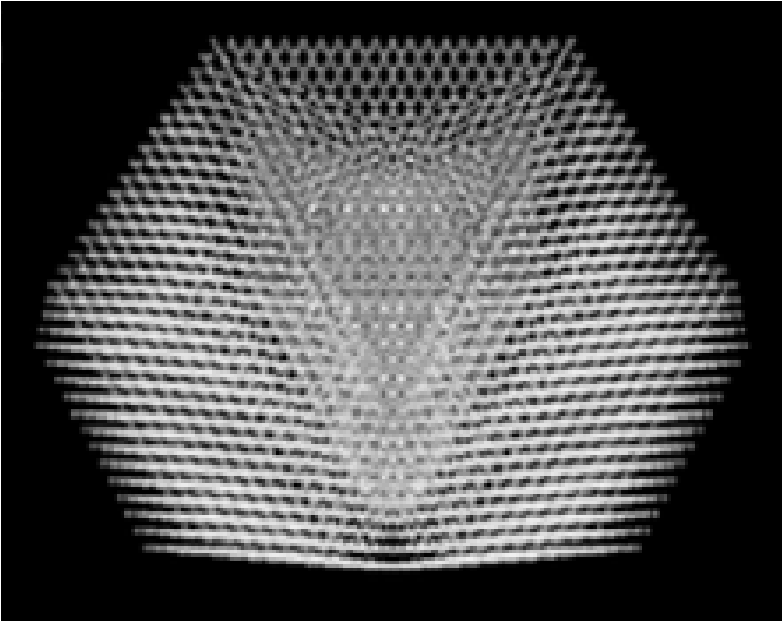
**our sensations are based on quantum effects**

**We are exploring ...**

**cross-sensing as synaesthetic objects and experiences**

**nano-enabled / nano-enhanced senses**

# Imagination of the nanoworld



TEM image of a gold nanocrystal

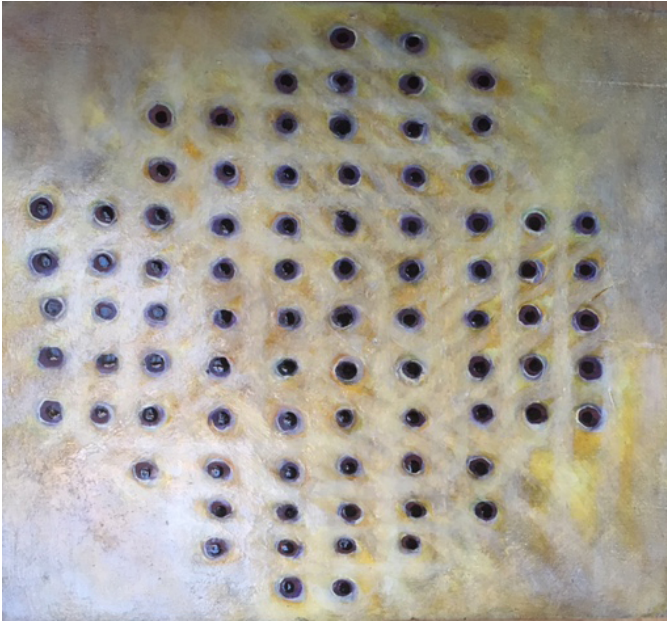
K. Koga: "*Novel bidecahedral morphology in gold nanoparticles frozen from liquid*", Phys Rev Lett 96, 115501, 2006.



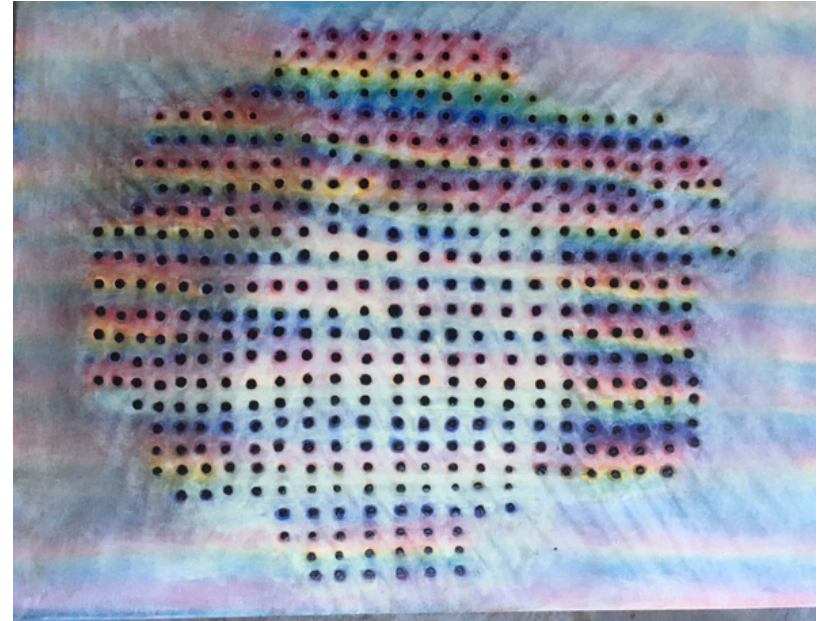
Raewyn Turner. Photism. 2018 Oil on linen  
22.5 cm x 21 cm

How to sense something what is invisible and all around you ?

# Imagination of the nanoworld



Raewyn Turner. Photism. 2018 Oil on linen  
22.5 cm x 21 cm



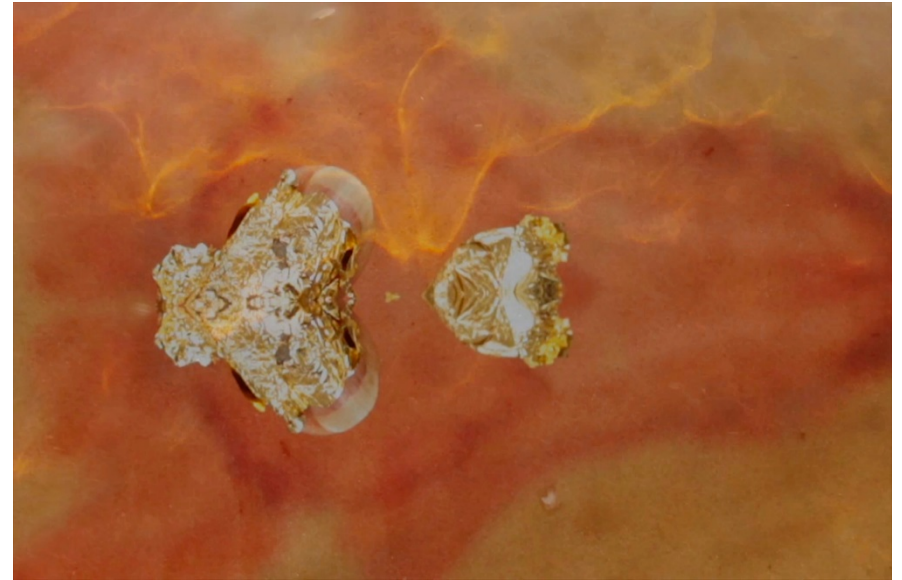
Raewyn Turner. Photism. 2018 Oil on linen  
60.5 cm x 46 cm

How to sense something what is invisible and all around us?

# Gold ...



Raewyn Turner & Maryse de la Giroday, Steep#1.

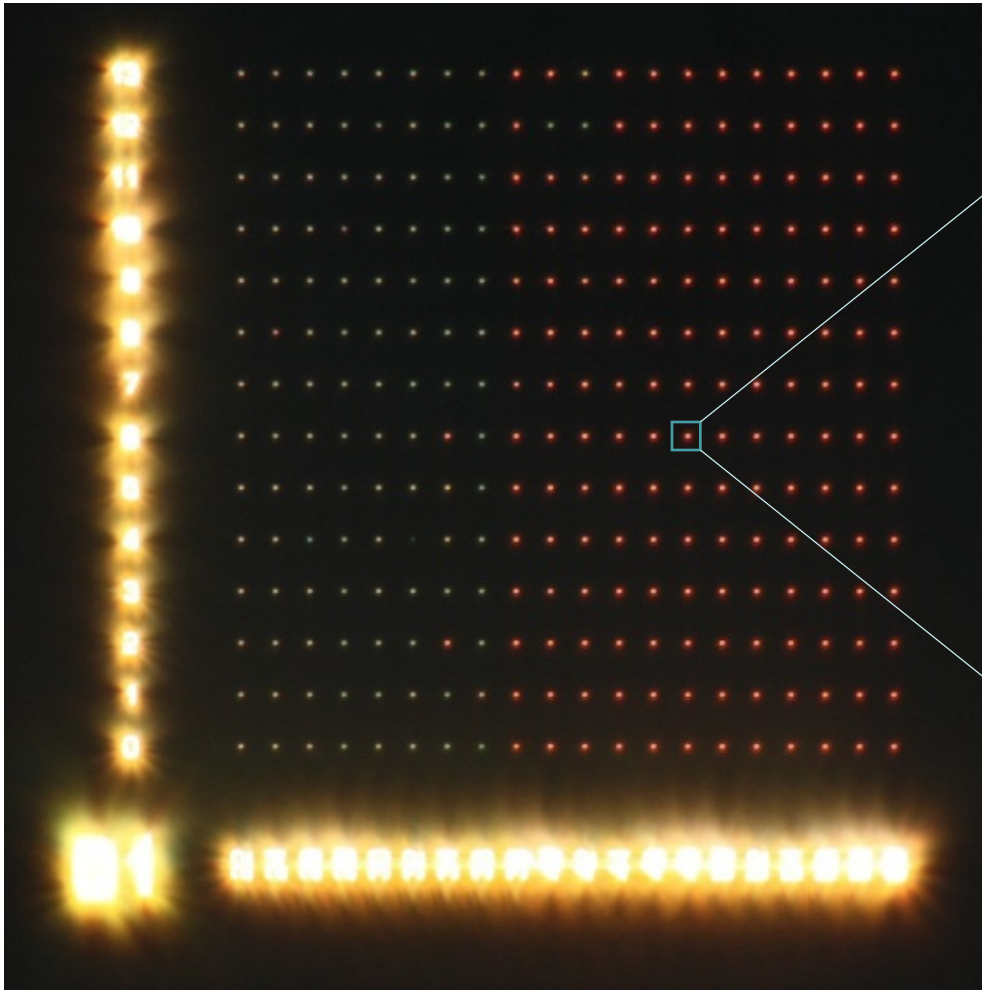


Raewyn Turner & Maryse de la Giroday, Steep#1.

Steep: A digital poetry of gold nanoparticles, [www.steep.nz](http://www.steep.nz)



... in a small world

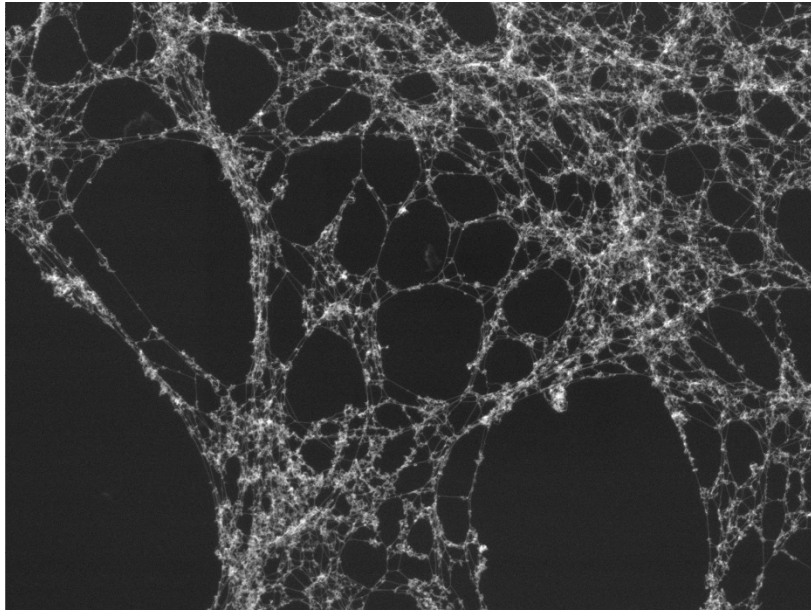


Optical (dark field) image of gold particles

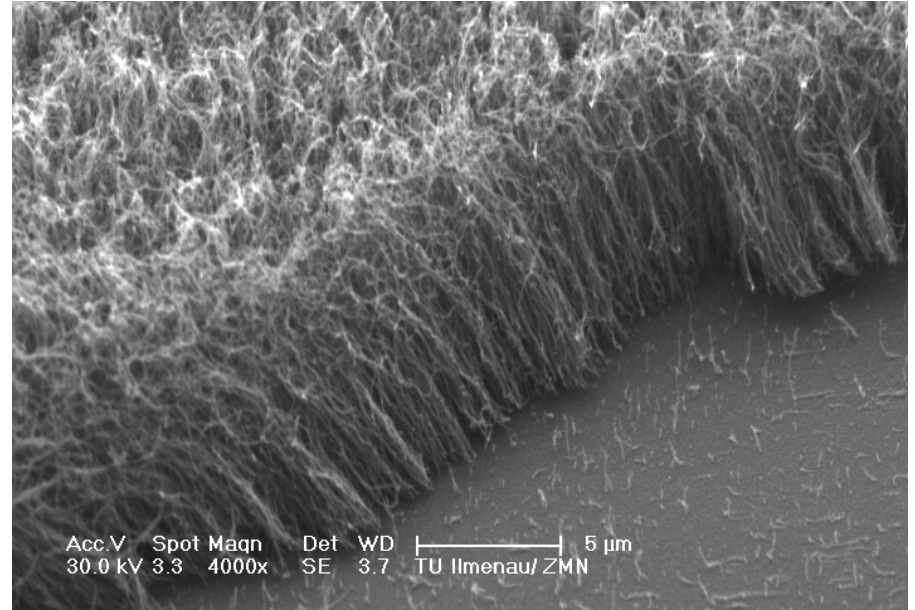


SEM image of a single gold nanoparticle

# Similar but different from the world we know



SEM image of a nanotube spider's web

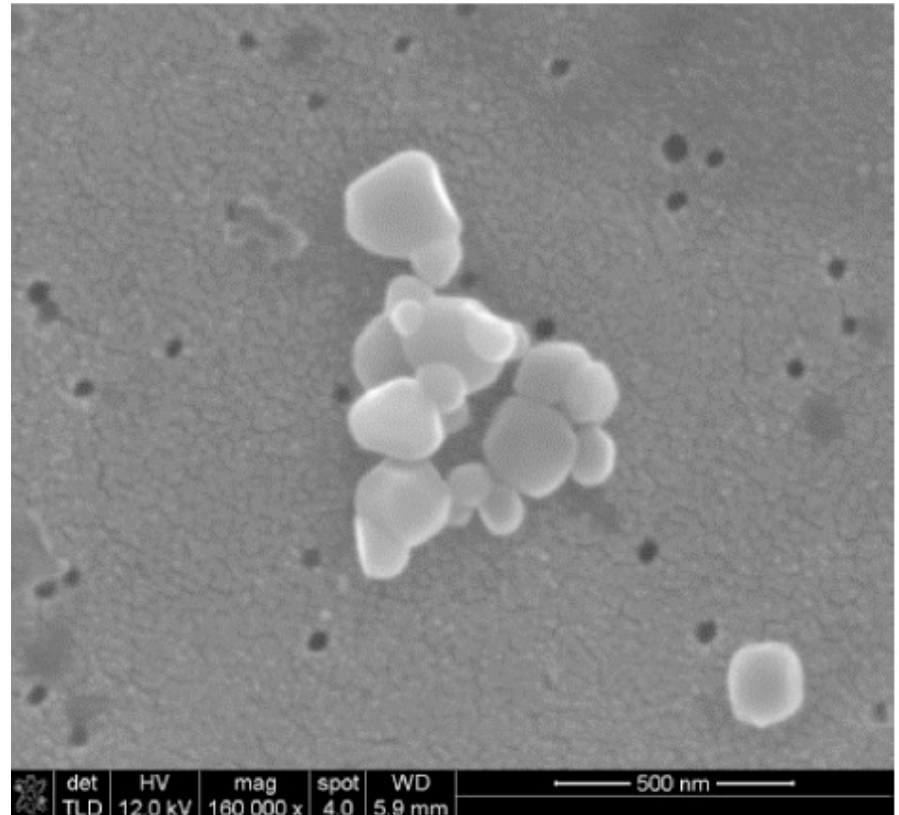


SEM image of a nanotube grass

# Titanium dioxide particles are used everywhere

database PEN  
(The Project on Emerging Nanotechnologies)  
<http://www.nanotechproject.org/>

are widely used in:  
sun creme (10 %)  
toothpaste (1%)  
cosmetics  
food



SEM image of the hard coating on a chewing gum



# Nanoparticles into the central nervous system

Inhaled nanoparticles enter via the olfactory epithelium into the central nervous system (2.3 mm / h)

G. Oberdörster *et al.*: "*Nanotoxicology: An Emerging Discipline Evolving from Studies of Ultrafine Particles*" Environmental Health Perspectives, 113, 823, 2005.

Potassium ion channels in the mitochondrial membrane equal: potato and mammalian brain

Nencki Institute of Experimental Biology: "*Human brain and the potato: Similarities within the mitochondrial ion channels*" ScienceDaily, 13 December 2011.

shaving creme (Gillete Foamy Regular) on a potato slice



Raewyn Turner, 2018, Experiment: Divine Discontent / Seeing Whispers

# The human brain and the potato



Raewyn Turner, 2018, Experiment: Divine Discontent / Seeing Whispers

# The human brain and the potato

Raewyn Turner, 2018, Experiment:  
Divine Discontent / Seeing Whispers



notes are matched to facial expressions

Time	Piano notes
0.00	F4
0.07	D4#
0.08	A3#
0.10	G4#
0.11	G4 + G3 + G2
0.14	A3
0.17	C3#
0.21	A2
0.23	F6
0.27	A5
0.33	A3#
0.38	F3#
0.44	F3
0.46	D2
0.53	C3#
0.57	F2# + F3#
0.59	D3#
1.05	D3
1.08	C3#
1.15	C2#
1.19	D2#
1.25	C2#
1.41	G1
1.43	A3#
1.53	A2#
2.04	D2

**Muchas gracias**