Sensing Nanos

Toni Fröhlich – Basel, Switzerland [toni.froehlich@alumnibasel.ch](mailto:toni.froehlich@alumnibasel.ch)Raewyn Turner - Auckland, New Zealand [r.turner@orcon.net.nz](mailto:r.turner@orcon.net.nz) Brian Harris – Auckland, New Zealand harrisbrian@xtra.co.nz

Key words: optical microscopy, electron microscopy, cross-sensory experiences, nanoscience, mapping correspondences

ABSTRACT:

Humans fabricate many kinds of nanoscale materials for use in daily life [1]. Imagine if the nano-enabled and nano-enhanced creations enters the human body and converge~~s~~ withone’s inner world. The properties of nanotechnology change depending on where the nanoparticles are, who they are with and which system they are in. On the one hand, hard and precise like a stone, and on the other hand soft and vague like the fog. It is everywhere and at any time, but far too small to understand it.

Our sensations are caused by nanoscale quantum processes since all receptors for light, smell, touch etc. originate from tiny quanta. So how can we understand this tiny world with our senses?

We are exploring the possibility of humans sensing ultrafine nanotechnologies and in particular cross-sensing them as synaesthetic objects that have the potential to react with cells and biomolecules and become lodged in the brain and central nervous system.

Few studies have considered the effect of nanotechnologies on the central nervous system, their enduring electromagnetic forces and thermal vibrations. Because time plays an important role in all physical and psychological processes, we may not notice the disruption and the transformations that follow the consequences of consuming nanotechnologies. Engineered nanotechnologies have never before existed in nature and may cause an alteration, a nano-enabled synaesthesia.

Metal‐based nanoparticles may interact with the nervous system [2]. We focused our attention on various personal care products which are used by many people. Certain brands of suncream contain nano zinc oxide and nano titanium dioxide. We found shaving foam which contains nanoscale "Titanium CI 77891".

Although titanium nanoparticles in part are defined by their intrinsic properties - their extrinsic properties are determined by relationships.

Mammalian neurons and the potato share a systemic molecular convergence [3] so

we placed personal care products on two potato slices side by side and filmed the interaction in time-lapse video. The audio was scripted using synaesthetic correspondences to facial expressions. The video was overlaid with text excerpts from Plato’s writings on Socrates Dialogues on Friendship and the influence of friends in shaping each other’s evaluative outlook.

During our investigations we developed a robot to create shaving foam faces by moving a nozzle connected to shaving foam from a can, over the surface of a slice of potato. The positions of the motors and the flow of foam were controlled using stepper motors, from drawings converted into G code. We are interested in being able to relate the character of the face to algorithmic changes in the line drawings. We found that the ambiguous shapes made by the foam coincidentally stimulated pareidolia and emotional interpretations.

This is a work in progress.

Brief biography:

[1] A. Weir *et al.*: “Titanium dioxide nanoparticles in food and personal care products”, Environmental Science & Technology (46), 2242 – 2250, 2012.

[2] R. Yokel *et al.*: “Metal-based nanoparticle interactions with the nervous system: The challenge of brain entry and the risk of retention in the organism”, Interdisciplinary Reviews Nanomedicine and Nanobiotechnology (5), 346 –373, 2013.

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

Sensing Nanos <https://vimeo.com/288979783> Raewyn Turner & Brian Harris

Foam Robot <https://vimeo.com/311325015> Raewyn Turner & Brian Harris

Seeing Whispers  https://vimeo.com/276365589 Raewyn Turner & Brian Harris