

SCU

The smallest complete, controllable and significant unit which contributes to the functionality of the process at the nanoscale.

Listed from most important to least important

Size Scale

The average size of the SCU

Scale: 0nm +

State of the Art

How close the technology is to being completely commercializable.

Commercializable is when it can be mass manufactured and profitable.

Scale: 0-3

0. Theory
1. Prototype
2. Manufacturable
3. Commercial

Use

Tool: a macro scale device that manipulates at a nano level

Device: a manufactured nanoscale object

Nano tool: a nanoscale device that can function as a tool.

Active

Whether the SCU initiates a change in the environment surrounding it.

Scale: Active/Passive

“Degrees of Freedom”

The number of dimensions or attributes of the SCU which can be controlled.

Scale: 0 +

Assembly Method

Scale:

Bottom-up: Lowest level components made first and combined into higher level components

Top-down: Approach which takes a larger block of material and whittles away what isn't needed.

Combination: A process which uses both forms of creation.

Assembly Precision

The ratio between what you get and what you want.

Scale: 0 – 1

Bio-Integration Index

Whether or not, during the course of the process, it interacts with an biological compound.

Scale: Yes/No

Forces

Forces, ranked by importance, involved in enabling the functionality of the SCU.

Materials

Type of materials used in the construction of the SCU.

Organic

Relating or belonging to the class of chemical compounds having a carbon basis; "hydrocarbons are organic compounds" (www.cogsci.princeton.edu/cgi-bin/webwn)

Scale: Organic/Mixed/Inorganic

Homogeneity

Homogeneous: Whether the SCU is a part of a homogeneous mixture.

Dangerous

Active
Biological integration
Size scale
Use

"Most dangerous"

Active
Easily bio-integrated
Small scale
Nanotool

NanoTechie

Size scale
Dimensions controlled
Deterministic assembly (assembly precision)
Active

"Most nanotechie"

Small scale
More dimensions controlled
Almost totally deterministic
Active

Applications

1. Medical diagnosis
2. Optics
3. Increasing mechanical strengths (ex. Light bullet proof vest, stronger textiles, stronger bricks)
4. Sensors (gas detection, gas classification)