A Bluffers' Guide:
to Environmental Nanoparticles

(Six simple steps to sounding like an expert)

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Step 1

Learn the Lingo

Nano:	Very Small
Technology:	Making stuff that does stuff
Engineering:	Technology for the over-50's
Particle:	A lump of stuff
Environment:	What you live in (Also, what everyone else lives in) (And, what everything else exists in)
Nano-Technology:	Making very small stuff that does stuff
Nano-Particle:	A very small lump of stuff
Environmental Nano-Particle:	A very small lump of stuff floating around in what we live in
Engineered Environmental Nano-Particle:	A very small lump of stuff floating around in what we live in, that does stuff

<u>Never</u> get into
arguments about
nano-definitions

Step 2

Identify the Story

There are many nanotechnology stories...

...nanotechnology is a technological revolution, that will lead to increased wealth and improved quality of life...

...nanomaterials are being used in more and more consumer products, from cosmetics to cuddly toys, and milkshakes to mountain bikes...

...there are gaping holes in our understanding of how nanoparticles might impact people's health or the environment...

...no-one is sure what happens when engineered nanostructured materials are released into the environment...

There are many nanotechnology stories...

Nanotechnology is a technological revolution, that will lead to cuddly toys; cosmetics and improved quality of life. There are gaping holes in our understanding of how mountain bikes might impact people's health and the environment. Nanoparticles are being used in more and more milkshakes. No-one is sure what happens to increased wealth from nanostructured materials, when engineered consumer products or nanomaterials are released into the environment.

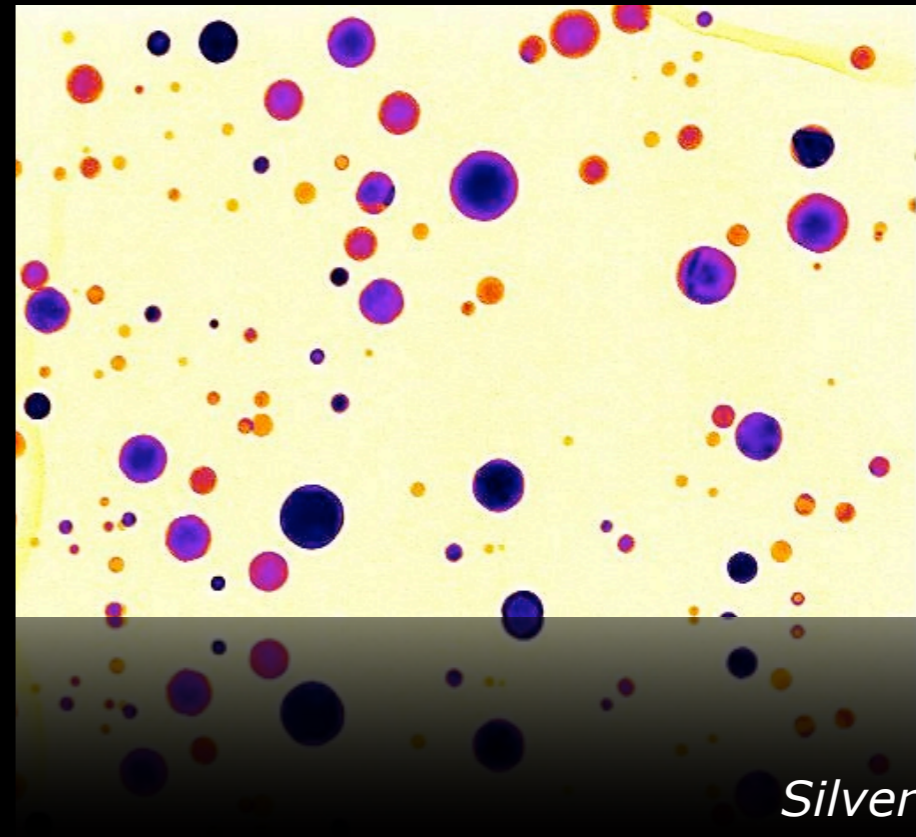...that are often told simultaneously!

Tip 2

Mixing and matching stories can lead to confusion!
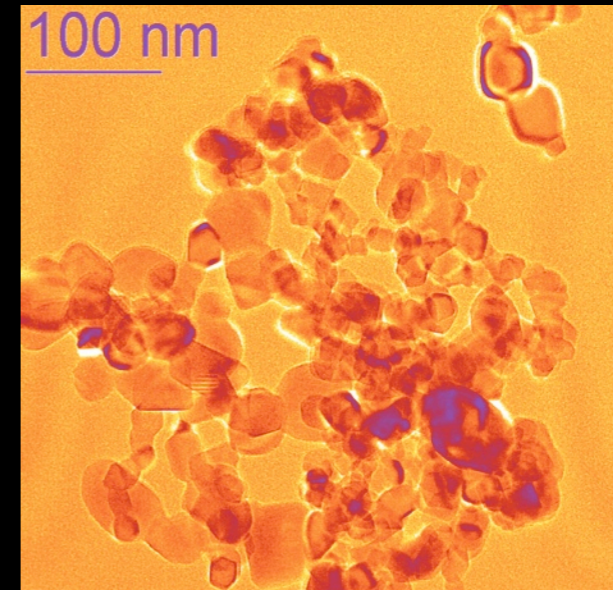
Step 3

Recognize the Key Characters

nano Silver

Silver

nano Titania

100 nm

Titania

www.nanotechproject.org/inventories/consumer/browse/products/optisol_sun_defence/

Tip 3

Explore the unknown

from what is known

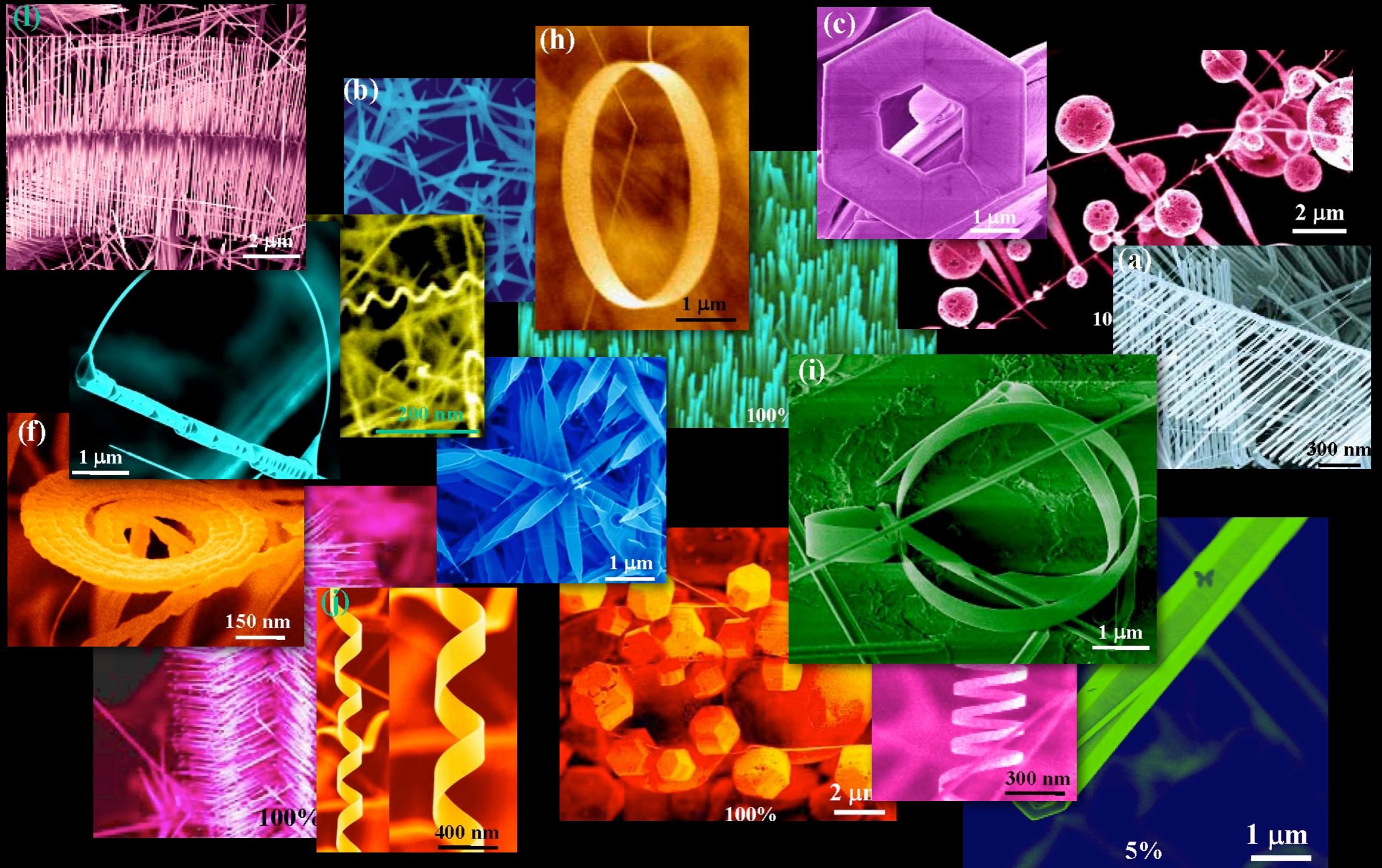**Step 4**

Nail the Plot

A nano plot-line:

"*Deviant*" *Behavior*

A conventional material is engineered to have a nanoscale structure, and as a consequence it begins to behave in unconventional (i.e. "odd") ways

"and they shall beat their swords into plowshares, and their spears into pruning hooks"

~ *8th Century BCE*
(Isaiah 2:4)

Similar Chemistry

Potentially Different Risks

Nano-ZnO
Images courtesy of Prof.
Z.L. Wang, Georgia Tech

Tip 4

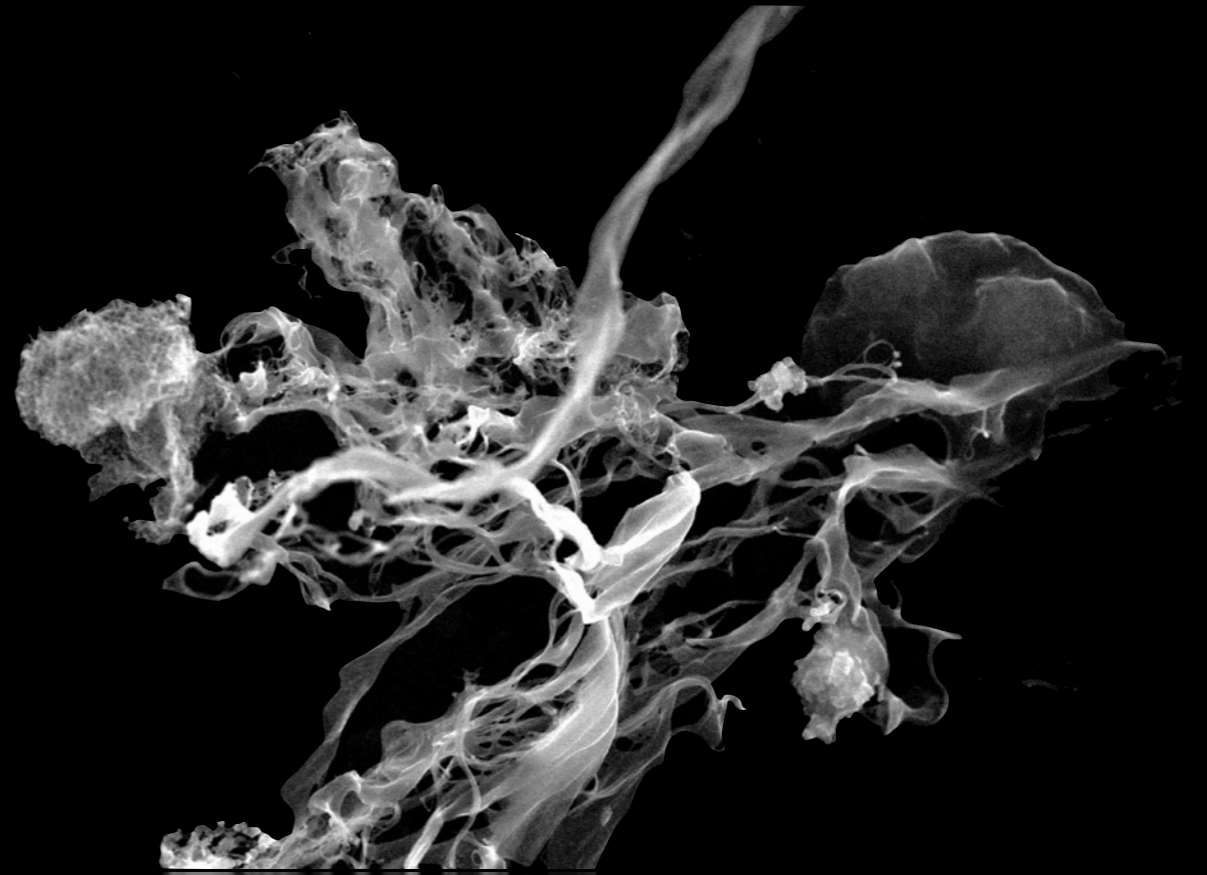*It's not what you have that counts, but what you do with it.*

Keep an eye out for Red Herrings

Question

Which are more dangerous: Big lumps of stuff or small lumps of stuff?

Answer

It's the wrong question!

Tip 5

Keep an eye out for trick questions

Step 6

Maintain a sense
of perspective

Question There is a *possibility* that fish will fall from the sky tomorrow

What do you do?

Scoot

Answer a) Keep a frying pan handy?

b) Weigh up the *probability* of the event occurring before taking action?

There is a *possibility* that iron is more hazardous when engineered at the nanoscale.

What do you do?

a) Ban all uses of nanoscale iron?

b) Weigh up the *probability* of the material causing harm?

Tip 6

A little common
sense goes a long way

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Learn the Lingo

Identify the Story

Recognize the Key Characters

Nail the Plot

Spot Red Herrings

Maintain a sense of perspective

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