

Self-Replicating Nano-Robots

By Luke Simpson, Associate Editor, Chem.Info

Yesterday marked 20 years since IBM researcher Don Eigler became [the first person to move an individual atom](#) [1], using the tip of his custom-built scanning tunneling microscope. Needing to show that he could do it with a high level of precision, Eigler later arranged 35 xenon atoms in the shape of his company's logo.

Besides the great publicity for IBM, this demonstrated the atomic-level manipulation necessary to build molecular nanomachines first proposed by Richard Feynman in the 1950s.

Eigler's accomplishment was seen by most as the dawn of an exciting new science with almost limitless applications, but others saw it as the beginning of the end. Three years earlier, engineer Eric Drexler coined the term "grey goo" in his 1986 book *Engines of Creation* — a doomsday scenario where out of control self-replicating robots consume the earth's ecosystem before moving into space to attack other unsuspecting victims.

One grey goo scenario involves artificial nanoplants with "leaves" made of solar cells that out-compete real plants and fill the planet with inedible foliage.

Talk about a buzz kill.

At a time when nanotechnology is starting to trickle down into both consumer products and industrial applications, I don't want to feel like I have to choose between progress and certain death.

I'm already a bit freaked out by the [mouse eating coffee table](#) [2] that uses its prey to power a microbial fuel cell.

Maybe the doomsday squad members are revolutionary thinkers who will someday shake their heads and say "I told you so," but I'm too much of an optimist to entertain the thought of microscopic machines taking over the earth.

The real threat to us humans is the possible toxicity of nanoparticles and the effects that they could have on the environment. Traditional chemicals-assessment and management approaches may not be adequate when applied to nanomaterials, paving the way for "green nanotechnology," or [the development of clean technologies that minimize potential environmental and human health risks](#) [3] associated with the manufacture and use of nanotechnology products.

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I'm usually skeptical when someone slaps two buzzwords together like this, but I'm all for a system that ensures this technology is developed in a responsible fashion. The editor in me is impatient for new industrial applications to write about, but the environmentalist in me is happy to wait another 20 years while we get it right.

Do you think self-replicating nano-robots will take over the earth? Drop me a line at luke.simpson@advantagemedia.com [4].

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[3] <http://www.nanotechproject.org/topics/green/>

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