

**William Sellier**

21:49 - Discussion

[http://mathbio.colorado.edu/mediawiki/index.php/MBW:Modelling\\_Components\\_of\\_a\\_Lunar\\_Life\\_Support\\_System](http://mathbio.colorado.edu/mediawiki/index.php/MBW:Modelling_Components_of_a_Lunar_Life_Support_System)

### **MBW:Modelling Components of a Lunar Life Support System - MathBio »**

This project is an extension of "Crop Growth and Associated Life Support for a Lunar Farm" by Tyler Volk 2.. This paper outlines a relatively simple model for crops growing in a moon base and a sample...

[Add a comment...](#)



**Simon Rose**

21:48 - Discussion

A thesis on light-weight radiation shielding materials.

<http://repository.lib.ncsu.edu/ir/bitstream/1840.16/606/1/etd.pdf>

 <http://repository.lib.ncsu.edu/ir/bitstream/1840.16/606/1/etd.pdf> »



Simon Rose21:59

Ok, not so useful. It sounds like this didn't work too well for gamma ray shielding.

[Add a comment...](#)



**Simon Rose**

21:44 - Discussion

"Nanoscale foams are today research materials, too complex and expensive to create at an industrial scale. But if materials engineers find ways to create these foams on a commercial scale, then applications for light-weight, strong, and radiation tolerant materials can be found in aerospace industry, nuclear fuels, and nuclear structural materials."

Read more:<http://www.nanowerk.com/spotlight/spotid=21747.php#ixzz2R3fISt5X>

### **Nanofoams are promising materials for radiation shielding »**

Radiation damage to materials is a major issue for builders of nuclear power plants as well as spacecraft engineers. The former have to worry about material failure due to the destructive radiation cr...

[Add a comment...](#)



**William Sellier**

20:47 - Discussion

Boom: <http://www.ncbi.nlm.nih.gov/m/pubmed/11537811/>

Add a comment...



**William Sellier**

18:19 - Discussion

<http://arc.aiaa.org/doi/abs/10.2514/6.2008-5791>

[http://proceedings.aip.org/resource/2/apcpcs/699/1/432\\_1](http://proceedings.aip.org/resource/2/apcpcs/699/1/432_1)



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**William Sellier**

17:29 - Discussion

<http://www.mnn.com/earth-matters/space/stories/nasa-invents-suitcase-sized-nuclear-reactor-to-power-planets>



**NASA invents suitcase-sized nuclear reactor to power planets »**

While most space energy needs are met with solar technology, sunlight may not always be available to astronauts in space, resulting in a portable nuclear source.

Add a comment...



**Simon Rose**

14:50 - Discussion

Wouldn't underground be find for radiation shielding? It would stop both alpha and beta rays, and there's little that we can do about gamma rays anyhow.

Add a comment...



**William Sellier**

14:48 - Discussion

Now we know, wind turbines, bad idea



Simon Rose<sup>14:51</sup>

Yeah, I figured. Air is too thin.

Add a comment...



**William Sellier**

14:45 - Discussion

He's pro nuclear :3

Electric lighting.

nuke power wins hands down.

screw photo system.

**3 comments**



William Sellier 14:47 Edit

He did not discuss nuclear options.

Add a comment...



**William Sellier**

14:44 - Discussion

[http://en.wikipedia.org/wiki/Artificial\\_photosynthesis](http://en.wikipedia.org/wiki/Artificial_photosynthesis)

P.S. I think we should focus on infla. Aeroponics. Awesome find!

[W Artificial photosynthesis - Wikipedia, the free encyclopedia »](#)

Using biomimetic approaches, artificial photosynthesis tries to construct systems doing the same type of processes. Ideally, a triad assembly could oxidize water with one catalyst, reduce protons with...

Add a comment...



**Simon Rose**

14:37 - Discussion

[http://en.wikipedia.org/wiki/Aeroponics#NASA\\_inflatable\\_aeroponics](http://en.wikipedia.org/wiki/Aeroponics#NASA_inflatable_aeroponics)

Highlight:

NASA's long range plans indicate that a human visit to Mars will need to utilize inflatable structures to house the spaceship crew on the Mars surface. Planning is under way[citation needed] to incorporate inflatable greenhouse facilities for food production.

NASA planning scenarios also reveal the Mars surface crew will spend 60% of their time on Mars farming to sustain themselves. Aeroponics is considered the agricultural system of choice because of its low water and power inputs and high volume of food output per unit area.

I particularly like the [citation needed]...

[W Aeroponics - Wikipedia, the free encyclopedia »](#)

[edit] Methods. The basic principle of aeroponic growing is to grow plants suspended in a closed or semi-closed environment by spraying the plant's dangling roots and lower stem with an atomized or sp...

Add a comment...



**William Sellier**

14:37 - Discussion

aeroponics :

Good: Aeration of roots, light

Bad: High risk: Any failure leaves roots susceptible to drought stress/wilt.  
nozzle buildup salt.

Maybe have a fail safe? but how?

[Add a comment...](#)



**William Sellier**

14:19 - Discussion

UV reaching surface of light is harmful to plants.

[Add a comment...](#)



**William Sellier**

14:19 - Discussion

Synthetic:

Reduction of mass good.

Finding in-situ resources.

Plants need water for physiological reasons - WATER CRITICAL

Hydroponics. Minimize total water mass by modif hydro - with tech like nutrient film.

Rooting media

[Add a comment...](#)



**Simon Rose**

13:54 - Discussion

The idea of using an RTG ([http://en.wikipedia.org/wiki/Radioisotope\\_Thermoelectric\\_Generator](http://en.wikipedia.org/wiki/Radioisotope_Thermoelectric_Generator)) for power is probably not a good idea. If we look at [http://en.wikipedia.org/wiki/Radioisotope\\_Thermoelectric\\_Generator#Models](http://en.wikipedia.org/wiki/Radioisotope_Thermoelectric_Generator#Models) it seems that (a) it is quite inefficient (20% if we're lucky), and moreover the current models at best produce only a few hundred W, although a lot of heat, which is... partially useful?

**Radioisotope thermoelectric generator - Wikipedia, the free encyclopedia »**

In the same brief letter where he introduced the communications satellite, Arthur C. Clarke suggested that, with respect to spacecraft, "the operating period might be indefinitely prolonged by the use...

[Add a comment...](#)



**William Sellier**

10:50 - Discussion

<http://imgur.com/1ObNtl3>

Absorp of atmos comps.

 [imgur: the simple image sharer »](#)

Imgur is used to share photos with social networks and online communities, and has the funniest pictures from all over the Internet.

[Add a comment...](#)



**William Sellier**

10:48 - Discussion

<http://imgur.com/7oQX4jC>

Composition of terres. atmos

 [imgur: the simple image sharer »](#)

Imgur is used to share photos with social networks and online communities, and has the funniest pictures from all over the Internet.

[Add a comment...](#)



**Simon Rose**

10:30 - Discussion

It's worth noting that re: the inbetween layers, there are a bunch of other more potent greenhouse gasses than both CO<sub>2</sub> and methane...

[http://en.wikipedia.org/wiki/Greenhouse\\_gas#Global\\_warming\\_potential](http://en.wikipedia.org/wiki/Greenhouse_gas#Global_warming_potential)

 [Greenhouse gas - Wikipedia, the free encyclopedia »](#)

Some gases have indirect radiative effects (whether or not they are a greenhouse gas themselves). This happens in two main ways. One way is that when they break down in the atmosphere they produce ano...

[Add a comment...](#)



**William Sellier**

Yesterday 22:28 - Discussion

<http://www.stormthecastle.com/images/terrarium/diagram2.jpg>

 [www.stormthecastle.com/images/terrarium/diagram2.jpg](http://www.stormthecastle.com/images/terrarium/diagram2.jpg) »

Add a comment...



**William Sellier**

Yesterday 21:47 - Discussion

Google hangout regarding deploy greenhouse

[Deployable Greenhouse - Space Apps Hangout \(Thursday, April 18, 2013\)](#)

**[Deployable Greenhouse - Space Apps Hangout \(Thursday, April 18, 2013\)](#)**

NASA Kennedy Space Center expert Ray talks with participants of the Space Apps Challenge for 2013  
Challenge - Deployable Greenhouse. <http://spaceappschallenge.org>

Add a comment...



**William Sellier**

Yesterday 21:34 - Discussion

Chamberlain, C., T. Graham, and M. Dixon. 2002. Analysis of plant water relations under variable pressure: technical challenges. SAE Technical Paper 2002-01-2382.

Corey, K.A., D.J. Barta, and R.M. Wheeler. 2002. Toward Martian agriculture: Responses of plants to hypobaric. Life Sup. Biosphere Sci. 8:103-114.

Bucklin, R.A., P. A. Fowler, and J.D. Leary. 2000. Design needs for a Mars deployable greenhouse...Expand this post »



**William Sellier** Yesterday 21:36 Edit

Additional :

Dome,Control Tower schematics

Others

SEBAC Waste Control - Chynoweth

Nanotech Polymer Coating- Beatty

Add a comment...



**William Sellier**

Yesterday 21:28 - Discussion

<http://science.ksc.nasa.gov/biomed/marsdome/papers.html>



**MARS GREENHOUSE »**

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**William Sellier**

Yesterday 21:06 - Discussion

hydrogen sulfide could boost growth

<http://phys.org/news/2013-04-key-ingredient-mass-extinctions-boost.html>

Add a comment...



**William Sellier**

Yesterday 20:57 - Discussion

Previous Studies with Plants and Pressure

- Wright Patterson Air Base, USA (1960s)
- Siegel et al. (1962, 1963)
- Burg and Burg (1965)
- Gale (1972, 1973)

- Rule and Staby (1981)
- Andre and Richaud (1985); Andre and Massimino (1992)
- Musgrave et al. (1988)
- Daunicht and Brinkjans (1992, 1996)
- Ohta et al. (1993)
- Goto et al. (1995, 1996), Iwabuchi et al. (1996)
- Corey et al. (1996, 1997)

Add a comment...



**Simon Rose**

Yesterday 20:52 - Discussion

Something like this might be good as an outer layer.

<http://www.aculon.com/markets-applications.php>

### **Non-Stick Hydrophobic Coating Applications, Adhesion Coatings Applications, Particle Treatment Applications - Aculon »**

Aculon's unique nanotechnology treatments enable non-stick, hydrophobic, oleophobic, and adhesion promoting surface characteristics in numerous applications.

Add a comment...



**William Sellier**

Yesterday 20:40 - Discussion

Working Document

[https://docs.google.com/document/d/1huyqjdOPI4JgLFThKBtHSILzhepM9qgeaptib\\_Hs3M0/edit?usp=sharing](https://docs.google.com/document/d/1huyqjdOPI4JgLFThKBtHSILzhepM9qgeaptib_Hs3M0/edit?usp=sharing)

### **Green Mars | International Space Apps Challenge »**

The International Space Apps Challenge is a 2 day technology development event during which citizens from around the world work together to solve current challenges relevant to both space exploration ...

Add a comment...



**William Sellier**

22:39 (edited) - Discussion

<http://spaceappschallenge.org/project/green-mars/>

Add a comment...