Re: High strength fibers for high pressure tubes.

Source: http://sci.tech−archive.net/Archive/sci.physics/2005−04/msg04012.html

- *From*: Mitchell Jones <mjones@xxxxxxxxxxxxxx>
- *Date*: 28 Apr 2005 00:28:13 EDT

In article <Xns9645BAC3851DWQAHBGMXSZHVspammote@xxxxxxxxxxxxxx>,
bz <bz+sp@xxxxxxxxxxxxxxxxxxxx> wrote:

[snip]

> >> If I had a nice place to live in L3 or L5, I would enjoy restoring my
> >> current properties in La and Wy to pristine condition. It would be a
> >> good hobby. I could watch my box turtles roam my property without my
> >> house in their way.
> >
> > ***{Maybe so, but if you were on L3, your neighbors would probably have
> > turtle soup. :−) −−MJ}***
>
> Not a good idea.
> http://www.geocities.com/abeisaw/SAA2001.html
> [quote]
> These turtles slow metabolic rate and omnivorous diet can render their
> flesh poisonous to humans. Accounts specific to the dangers of eating box
> turtles include a report that Pennsylvania miners ate box turtles (during a
> strike) and became ill. This account explains that the turtles may had fed
> on a poisonous fungus, which did not affect them but made their flesh
> temporarily poisonous (Ernst 1972). Another account tells of box turtles
> that were accidentally roasted in burning brushpiles in Mississippi and
> were eaten by several boys, all of whom subsequently became ill (Carr
> 1952).
> [unquote]

***{We can agree, then, that if the people who remain on Earth while you
reside at L3 are not prone to act on bad ideas, your turtles will be
safe. :−) −−MJ}***

> ....
> >> All the carbon is not in useable form. In fact, most of it is not.
> >> Calcium carbonate does not burn very well. There are many other
> >> carbonate from which we can not extract energy.
> >
> > ***{Free oxygen (O2) is a highly reactive substance, and, as such, was
> > not present in the primordial atmosphere of the Earth. Photosynthesis
> > stores solar energy in complex carbon compounds by removing oxygen and

> > releasing it into the atmosphere. The forms of carbon that remain can be
> > burned to extract energy.
>
> Unfortunately they are not accessable for use as fuels.

{Reserves are defined as resources that can be extracted profitably. As technology advances, deposits that were not previously accessible become accessible, but do not yet become reserves. But then, when technology advances some more, that which was originally not accessible at all becomes accessible at a profit, and is added to existing reserves. (This was all discussed in the thread I referenced earlier.) −−MJ}

> http://www.sciam.com/askexpert_question.cfm?articleID=000E9FDF−CBC1−1C71−
> 9EB7809EC588F2D7
> [quote]
> there is not nearly enough fossil fuel to account for the atmospheric
> oxygen inventory. But there is a lot more organic matter buried in the
> crust in the form of finely disseminated particles incorporated in shales
> and limestones.
> [unquote]

{Oil shales and tar sands, for more than a hundred years, were not considered part of reserves, because the material they contained could not be extracted at a profit. In recent years, however, new technologies have been developed that have converted vast stocks of previously submarginal deposits of such material into reserves, and there is every reason to expect that future technologies will continue to add to reserves in the same way. Bottom line: politicians, in the final analysis, are the only thing standing between the engineers and the oil. −−MJ}

> > That's why we refer to them as fuels. When
> > they are burned, the oxygen that was originally released into the
> > atmosphere is removed. And if all of the carbon fuels on Earth produced
> > by photosynthesis were burned, *all* of the oxygen in the atmosphere
> > would be removed.
>
> Actually if ALL the reduced carbon were burned, it would take more oxygen
> than is available.

***{But if all the carbon fuels produced by photosynthesis were burned−−meaning that the reaction which produced the atmospheric oxygen were reversed−−the oxygen in the atmosphere would obviously be removed, as I said. :−)

Of course there is more combustible fuel on Earth than that produced by photosynthesis; hence more oxygen than is present in the atmosphere would be required to burn it. Photosynthesis produced carbon based fuels only by acting on the primordial CO2/carbonate reservoir. But there was, in addition to that, also a vast primordial methane reservoir, which is

itself sequestered in the Earth's crust. It is the source of much of the natural gas that is being presently extracted and used, and there exists enormous additional supplies−−not yet reserves−−sequestered off of the continental shelves in the form of methane hydrates. When the two sources of hydrocarbon fuel are put together, we are talking about hundreds of thousands of years of usage at current rates of consumption because, as noted above: the politicians are the only thing standing between the engineers and the fuel.

All of these considerations were discussed in the thread referenced earlier, though not with the same focus as here. Still, it will be worth your while to go back and read through that material.

−−Mitchell Jones}***

> [quote]
> "Clearly, there is more organic matter in the crust than can be accounted
> for only by the amount of oxygen in the air and in these oxidized
> reservoirs. The additional organic matter must have come from anaerobic
> bacteria that converted carbon dioxide to organics via processes that do
> not create free oxygen. (These bacteria use reduced chemical species from
> weathered igneous rocks and from emanations of volcanic/hydrothermal gases
> and fluids.)
> [unquote]
>
> As I said before, much of the CO2 removed from the atmosphere was turned
> into things like calcium carbonate and other minerals.

***{And as I said before, that is irrelevant, since the material left behind when oxygen was released into the atmosphere by photosynthesis was combustible hydrocarbon fuel. The point here is that there must exist, somewhere in the Earth's crust, combustible hydrocarbon fuels that, at a minimum, contain carbon equal to 12/32nds of the mass of the oxygen in the atmosphere. The amount of incombustible carbon containing material that may also reside in the crust is manifestly irrelevant.
−−MJ}***

> [quote]
> "Organic matter in shales is the dominant reduced carbon reservoir. The
> earth's crust contains 1.1 x 1021 moles of reduced carbon−−that is, carbon
> that has been freed from its oxygen (one mole of an element is equal to
> 6.02 x 1023 atoms of that substance).

***{The above numbers should be expressed as powers of 10, e.g., 10^21.
−−MJ}***

> The total amount of organic carbon
> needed to account for all the oxygen in the atmosphere is only 0.038 x 1021
> moles!

***{The weight of the O2 in the atmosphere is 1.11x10^15 metric tons, so

the amount of carbon in combustible fuel, stored in the crust, is at least (12/32)(1.11x10^15) = 4.17x10^14 metric tons. That is 4.17x10^20 grams. A mole of carbon is 12 grams, so it is 3.48x10^19 moles, or ..0348x10^21 moles, if you insist on a leading zero. That means the 1021 number, quoted by you above, should be 10^21. −−MJ}***

> In other words, based on the amount of buried carbon, the atmosphere
> seems to contain far too little oxygen. Some of that missing oxygen has
> gone into other materials, 'oxidizing' them in the process. Oxidized
> reservoirs whose oxygen probably derives from organic matter are sulfate,
> found in both seawater and evaporite rocks (equivalent to 0.48 x 1021 moles
> of organics) and in ferric iron (equivalent to 0.064 x 1021 moles).
> [unquote]

{As already noted, a vast quantity of methane was part of the material originally swept up from space when the Earth formed. All of it qualifies as "reduced carbon" in the sense that it is obviously not presently linked to oxygen. It would be erroneous, however, to conclude that it was reduced here on Earth, for reasons discussed in the thread referred to earlier. (Briefly: vast quantities of methane ice were present in the original cometary material from which Earth and the other planets formed. If that methane was produced by removal of oxygen, it happened long before the Earth ever existed, and was not due to photosynthesis or any other metabolic process taking place on Earth.) −−MJ}

> Just to keep things straight, the O2 in the air comes from Water, not from
> CO2.

{The basic form of photosynthesis is 6CO2 + 6H2O + solar energy −−> C6H12O6 + 6O2. For our purposes, it makes no difference whether the 6 O2's that are released come from the water or from the CO2. (Though, obviously, they can't all come from the H2O, because there aren't enough available from that source. If you don't believe me, count 'em.) Either way, 6 carbons are stored as fuel in the crust for every 6 O2's that are released into the air, and the ratio by weight is 12/32, as I stated earlier. −−MJ}

> [quote from http://www.biologie.uni−hamburg.de/b−online/e24/24.htm]
> ....photosynthesis [is] a redox reaction with H2X as the electron donator
> (the oxydizable substance). In the case of green plants is it H2O and this
> means that not the carbon dioxide but the water is broken down.
> [unquote]

{Not true and not relevant. −−MJ}

> Thus, the oxygen in the air comes mostly from breakdown of WATER.

***{No more than half can come from the water. Count 'em. Hence even when you say "mostly," your statement is not true. More importantly, it is also not relevant. Wherever the free oxygen in the product comes

from, the important point is that the ratio of carbon to oxygen in the product is 12/32. Why is that important? Because it enables us to determine the carbon content of fuel in the crust as the result of photosynthesis, by simply multiplying the tonnage of oxygen in the atmosphere by 12/32. When we do that, we discover−−surprise!−−that there is *at least* enough unextracted hydrocarbon fuel in the crust to permit 100,000 years of usage at current rates of consumption. And that means−−surprise!−−that "peak oil" is pure, unadulterated environmentalist bullshit. And that means−−surprise!−−that the politicians are the only thing standing between the engineers and the oil. −−MJ}***

> Of
> course, that breakdown also produces hydrogen and the plants use CO2 to get
> Carbon and make hydrocarbons, but plants can produce oxygen without CO2.

{Not by photosynthesis they can't. In any case, this is irrelevant to the main point, which is that there must be, at a minimum, 1 carbon stored as fuel in the crust for every O2 in the atmosphere. And, depending on what is linked to the carbon, the total weight and energy content of the fuel will usually be much greater than that of the carbon alone. −−MJ}

> http://www.biologie.uni−hamburg.de/b−online/e24/24.htm
>
>
>
> > −−Mitchell Jones}***
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- ***Follow−Ups***:
  - ♦ ***Re: High strength fibers for high pressure tubes.***
    - ◊ *From:* bz

- ***References***:
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- Prev by Date: ***Re: Changing speed in gravity not explained BUSTED***

- Next by Date: ***Re: electron***
- Previous by thread: ***Re: High strength fibers for high pressure tubes.***
- Next by thread: ***Re: High strength fibers for high pressure tubes.***
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