

POLYMER THAT CAN DELIVER OXYGEN FOR GERMINATION ON MARS



16th June

POLYMER THAT CAN DELIVER OXYGEN FOR GERMINATION ON MARS

Issue

In a recently published paper, researchers have developed an oxygen delivery polymer that enabled the first successful germination in a Mars-like environment.

Background

If we want to set up a permanent settlement on Mars, there are many challenges we need to overcome — one of them, the sustainable cultivation of edible crops.

Details

- Mars is similar in many ways to Earth. Its length of day, dry surface area and general relief are similar to those on Earth, which makes the Red Planet a prime target for an eventual colonization attempt.
- On Mars, there already are already some resources that we can use to grow harvestable plants. For instance, the layer of loose, soil-like material called regolith contains chemical elements such as phosphorous, iron, and potassium — all of which are needed for most plants to grow.
- While plants are able to supply their own oxygen after some time, it is needed in molecular form for most plants to develop from seed to seedling. Unfortunately, the Martian atmosphere consisting of 95% carbon dioxide contains mere traces of oxygen.
- There are two ways of obtaining oxygen in a Mars-like environment: extract it from regolith metal oxides, and electrolysis. Both have some major downsides, namely time consumption and proximity to water respectively.

- Scientists have developed a polymer system. When combined with sodium hydroxide and hydrogen peroxide, the polymer becomes oxygen infused foamed hydrogel which can deliver controlled amounts of gaseous oxygen.
- The foamed matrix can be mixed into the regolith or coated around the seed and can be used to grow plants.
- For the first time in history, scientists succeeded in germinating plants in a Martian environment. Cress, a typical test object for plant research, grew almost identically in the uninhabitable environment when the polymer system was used in comparison to the control group.
- The findings could mean a big step forward towards the distant possibility of a human colony on Mars.

STUDY IQ

TOP SELLING COURSES



UPSC/IAS
(Pre + Mains)

~~Rs.58,000~~

~~Rs.28,000~~

Rs.17,500

Click
Here



All Govt
Exams

~~Rs.33,000~~

~~Rs.13,000~~

Rs.11,500

Click
Here



SSC & Bank
Combo

~~Rs.22,000~~

~~Rs.8,600~~

Rs.6,700

Click
Here



UPSC Prelims
2020-Test Series

~~Rs.9,000~~

~~Rs.7,000~~

Rs.3,000

Click
Here



Madhya Pradesh
PSC

~~Rs.52,000~~

~~Rs.28,000~~

Rs.16,000

Click
Here



Uttar Pradesh
PSC

~~Rs.52,000~~

~~Rs.27,500~~

Rs.16,000

Click
Here



Bihar PSC

~~Rs.52,000~~

~~Rs.28,000~~

Rs.16,000

Click
Here



CAPF (A.C.)
Exams

~~Rs.340500~~

~~Rs.17,500~~

Rs.12,500

Click
Here



UPSC Opt -
Geography

~~Rs.30,000~~

~~Rs.13,500~~

Rs.11,000

Click
Here



RBI Grade B

~~Rs.24,000~~

~~Rs.11,000~~

Rs.8,500

Click
Here