

CO₂-HYBRID

Monthly Project Newsletter

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Source: <https://redshift.autodesk.com/co2-capture/>

FLUORINATED MEMBRANE BREAKS A LIMIT FOR CAPTURING CARBON DIOXIDE

Carbon dioxide is an all too common waste product of industry, belched into the air in huge amounts from smokestacks. Now, researchers have developed a new type of fluorinated membrane that can selectively filter CO₂ out of flue gas at the point of release.

The secret ingredient of the team's new membrane is fluorine. This element bonds particularly strongly to carbon, making it an attractive option for carbon capture. The researchers started with a fluorine-based polymer, then heated it to carbonize it.

Normally, membranes like this have a trade-off between selectivity for certain gases, and permeability – as one goes up, the other goes down. But the team says that the fluorine-based membrane balances the two properties well, breaking what's known as the Robeson upper limit.

“The approach resulted in a carbon dioxide-philic material with high surface area and ultra-micropores that is stable in high-temperature operating conditions,” says Zhenzhen Yang, first author of the study.

In future work, the team plans to further investigate the mechanism for fluorine’s CO2 selectivity, and try to improve the recipe further.

Source: <https://newatlas.com/environment/fluorinated-membrane-carbon-dioxide-capture/>

\$100M GIGATON SCALE CARBON REMOVAL



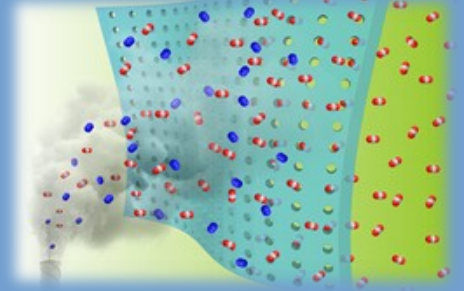
The world's leading scientists estimate that we may need to remove as much as 6 gigatons of CO2 per year by 2030, and 10 gigatons per year by 2050 to avoid the worst effects of climate change.

We need bold, radical tech innovation and scale up that goes beyond limiting CO2 emissions, but actually removes CO2 already in the air and oceans. If humanity continues on a business-as-usual path, the global average temperature could increase 6°(C) by the year 2100.

In 18 months fifteen teams from around the world will be selected for the carbon capture competition, which is expected to last four years.

Any carbon-negative solution is eligible: nature-based, direct air capture, oceans, mineralization, or anything else that sequesters CO2 permanently.

Source: <https://www.xprize.org/prizes/elonmusk>



CARBON NEGATIVITY, NOT NEUTRALITY

” This is not a theoretical competition. We want teams that will build real systems that can make a measurable impact and scale to a gigaton level.”

If the contest is successful, the organizers say, it would spur an array of new technologies that, taken together, would remove 10 gigatons of carbon from the planet per year by midcentury — nearly a third of the carbon that human energy use pumps into the air every year.

So far, the simplest method is simply planting trees. In any case, something has to be done so our grandkids won't be living underwater.