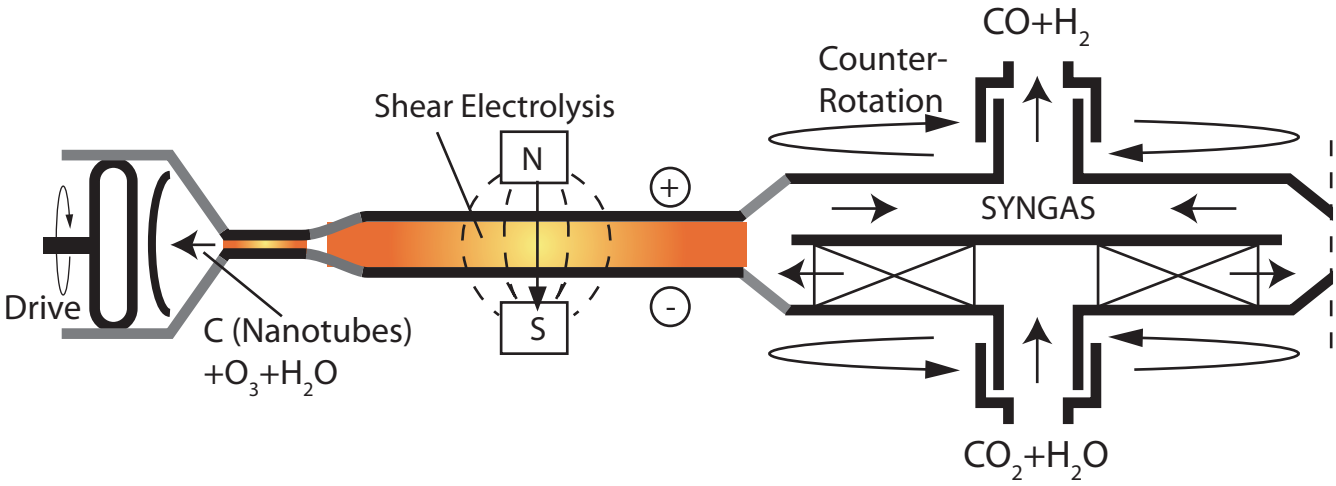
Vorsana Shear Electrolysis



Continuous Cracking of CO_2 and Steam into Syngas

In the Vorsana Shear Electrolysis Reactor, carbon dioxide is cracked by shear electrolysis and converted into syngas (CO + H_2). Cracking carbon dioxide is a way to store and use otherwise wasted power from off-peak solar and wind power plants. This reactor can also be used to crack methane (CH_4) into hydrogen and elemental carbon, including nanotubes.

A disk dynamo, also known as a Faraday disk, is produced by the rotation of a conductive disk through a transverse magnetic field. Two parallel conductive disks rotating in opposite directions create a large electrical potential between them, and a cloud corona electrical discharge which can be used for continuous electrolysis of a gas. Electrolytic cracking is assisted by shear, and anisotropic (organized) turbulence clears gas from the electrodes and draws electrolysis products in radially opposite directions (i.e. radial counterflow), with light and heavy products separated by centrifugal force. Oxygen, axially fed CO_2 and water vapor flows radially outward in boundary layers against the charged impellers, while the lighter syngas (H_2 and CO) flows radially inward through the radial vortex network in the shear layer between the impeller/electrodes, to be withdrawn through an axial exhaust conduit, while the heavier ozone and valuable solid carbon, including nanotubes, are extruded from the periphery.

The Vorsana Shear Electrolysis Reactor is a way to recycle carbon into syngas at IGCC power plants, and to recover valuable carbon products and ozone from waste CO_2. and methane. It is better than a CO_2 sequestration approach because it provides commercial value to CO_2, helping to solving global climate change by turning trash into treasure. *Patented in the UK and China. US and international patents pending.*

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