



ABSORBENT FOR CARBON DIOXIDE AND METHOD FOR MANUFACTURING THE SAME

Affiliation : Korea university **Type of Partnership :** Open for negotiation **Cost :** Open for negotiation
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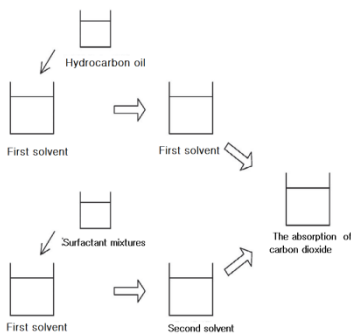
Abstract

The present invention is related to a carbon dioxide absorber and its manufacturing method for collecting for removing carbon dioxide from the IGCC process, and more particularly to a carbon dioxide absorber and a method of manufacturing the same, characterized in that the hydrocarbon oil in the form of droplets.

Problems with Existing Technology

The existing method had a disadvantage of being hard to produce in a large amount because of being complex and expensive.

- Solid particles such as the Al_2O_3 , SiO_2 , Fe_3O_4 used in the nanofluidic takes place a phenomenon of agglomeration being united with each other, the precipitated particles has a problem that causes the corrosion in the tube.
- Further, the solid particles are not efficient because of the absorption takes place only on the surface of the particles.
- The development of a highly efficient absorbent low energy consumption does not cause agglomeration is required accordingly.



〈A schematic view showing the method for producing a carbon dioxide absorbent〉

Technology Readiness Level

TRL 3 : Experimental Proof of Concept

TRL1	TRL2	TRL3	TRL4	TRL5	TRL6	TRL7	TRL8	TRL9
Basic Technology Research	Technology Concept formulated	Experimental Proof of Concept	Technology validated in lab	Technology validated in relevant environment	Technology demonstrated in relevant environment	System Prototype in operational environment	System complete & qualified	Full commercial application

Differentiation and Effect

Differentiation

Carbon dioxide which can increase the efficiency of the absorption

- It requires a low energy consumption.
- Since droplets other than solid particles are used, a coagulation phenomenon does not occur and consumption for redispersion and tube corrosion does not occur.
- It enables not only the surface of the absorbent but also the internal absorption phenomenon.

Effect of Technology

The characteristic of a high-efficiency carbon dioxide absorbent

- Since droplets other than solid particles are used, a coagulation phenomenon does not occur to require a small amount of energy consumption for redispersion and tube corrosion does not occur.
- It enables not only the surface of the absorbent but also the internal absorption phenomenon.



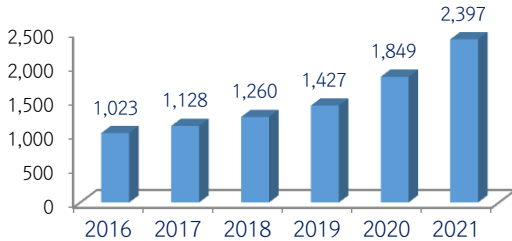
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Technology Application Field

It can be used in various field such as gasification combined cycle(IGCC).



Market Trends



The strategy of spreading energy industry 2030

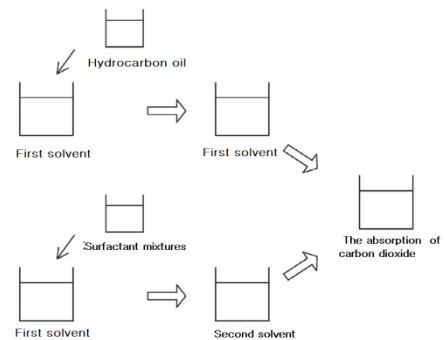
<Global energy market, %>

- According to global climate change, the investment in renewable energy and energy efficiency is expected to be increased to \$12.3 billion by 2030.
- The Innovation of new energy industries is started especially the renewable energy in some countries.

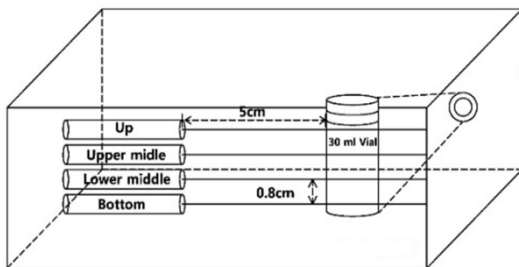
Technology Implementation

The method for producing a carbon dioxide absorbent

- The present invention includes the steps of forming a first solution by adding hydrocarbon oil to a first solvent.
- It adds a surfactant mixture to the second solvent to form a second solution, and mix the first and second solutions. Also, it may mix the first solution and the second solution and further divide the droplet.
- The droplet size may be adjusted by changing the ultrasonic treatment time or frequency.



<A schematic view showing a method for producing a carbon dioxide absorbent>



< A schematic view showing an experimental procedure for measuring scattered light of a carbon dioxide absorbent>

Absorbent for Carbon Dioxide

- The present invention includes a solvent, a hydrocarbon oil dispersed in the solvent, and a surfactant mixture, and the hydrocarbon oil is in a droplet form.
- All of these solvents are suitable for absorbents since their purity of carbon dioxide separation is 90% or more.
- The solvent is at least one selected from the group consisting of methanol, N-methyl-2-pyrrolidone, dimethylether polyethylene glycol, dimethyl carbonate, diethyl carbonate and triacetin.

List of related patents

No.	Title of Invention	Patent No./ Application No.
1	CARBON DIOXIDE ABSORBENT AND MANUFACTURING METHOD THEREFOR	PCT/KR2018/002944