

## Global Warming: A Green Catalytic Approach for the Decomposition of Carbon Dioxide

G Vidhya Lakshmi and C Kannan\*

\*Department of Chemistry, Manonmaniam Sundaranar University, Tirunelveli-12, Tamil Nadu, India.

Published November 01, 2019

### ABSTRACT

Global warming is the major environmental threat in the 20<sup>th</sup> century. According to IPCC (Intergovernmental Panel on Climatic Change), in the mid-20<sup>th</sup> century they observed increase in globally averaged temperature due to the increase in anthropogenic greenhouse gas concentrations that leads to the warming of the Earth surface. The greenhouse effect arises mainly due to carbon dioxide, methane and other atmospheric gases absorb outgoing infrared radiation resulting in the raising of temperature. In its turn, especially CO<sub>2</sub> is blamed to be the main reason for causing greenhouse effect. Carbon dioxide is not only anthropogenic; it is also the cause for climatic changes and various natural processes like ocean changes in CO<sub>2</sub> solubility.

Hence in this present investigation, we have decomposed the CO<sub>2</sub> by a novel green solid acid catalyst. It is synthesized by using a simple sol-gel method. AlPO<sub>4</sub> and ZnAlPO<sub>4</sub> are synthesized by using n-butyl amine as the template. These materials are characterized by FT-IR, SEM, BET and XRD analysis for confirming the tetrahedral framework, morphology, surface area and pore size and crystalline nature of the material, respectively. The catalytic performance of carbon dioxide decomposition is evaluated over AlPO<sub>4</sub> and ZnAlPO<sub>4</sub> by using a specially designed U-shaped catalytic reactor. The effect of temperature, flow rate, catalytic dosages and time on stream is optimized for maximum carbon dioxide decomposition (99%) and selectivity of oxygen (52%) and carbon monoxide (48%) over AlPO<sub>4</sub> and ZnAlPO<sub>4</sub>.

**Corresponding author:** C Kannan, Department of Chemistry, Manonmaniam Sundaranar University, Tirunelveli-12, Tamil Nadu, India, Tel: 9443507036; E-mail: chellapandiankannan@gmail.com

**Citation:** Lakshmi GV & Kannan C. (2019) Global Warming: A Green Catalytic Approach for the Decomposition of Carbon Dioxide. Adv Nanomed Nanotechnol Res, 1(S1): 01.

**Copyright:** ©2019 Lakshmi GV & Kannan C. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.