
Title: Membranes for Carbon Dioxide Separation/Capture Applications



Evangelos P. Favvas

(Guest Editor)

Institute of Nanoscience and Nanotechnology,
National Center for Scientific Research "Demokritos",
Aghia Paraskevi – Athens, Attica,
Greece
E-mails: e.favvas@inn.demokritos.gr, e.favvas@gmail.com

Proposal

Carbon dioxide is a naturally occurring gas that existed in the atmosphere long before humans. Carbon dioxide (CO₂) is the fourth earth gas in concentration after the nitrogen (N₂), oxygen (O₂) and argon (Ar). In Earth's atmosphere it is considered as a trace gas which presents an average concentration between 0.036% (360 ppm) and 0.041% (410 ppm), depending on the location.

Although carbon dioxide is not classified as a toxic or harmful gas, the rising of CO₂ levels causes an enhanced greenhouse effect. Over the past ten thousand years, the level of atmospheric CO₂ in the atmosphere has remained at relatively stable levels. However, human CO₂ emissions over the past few centuries have upset this balance. The increase of CO₂ concentration has some direct effects on the environment. For example, as the oceans absorb CO₂ from the atmosphere, it leads to acidification that affects many marine ecosystems. However, the rise of CO₂ has a main impact on the environment provoking warmer temperatures.

To this end, the development of new technologies for the reduction of CO₂ emissions as well as the improvement of new technologies for CO₂ separation and capture have been established as main priorities for scientists and governments worldwide. On the other hand, the ability to use the CO₂ by its transformation as a resource for the production of chemicals, materials (polymers) and fuels increase the necessity to dispose technologies for CO₂ separation. To this purpose, membranes can play an important role thanks to their ability to separate gases with different physical and chemical properties. Especially, both polymeric and inorganic materials are good candidates for CO₂ separation due to the remarkable separation mechanism of carbon dioxide. Furthermore, the advantage of the membrane technology to separate gas mixtures without high energy requirement makes this field more and more attractive!

We invite authors to submit original research as well as review articles to this special issue in **Journal of Membrane and Separation Technology** that will help in developing new membrane materials and processes for CO₂ separation. Potential topics include, but are not limited to:

Recent discoveries of polymeric membranes for CO₂ separation

Inorganic membranes for CO₂ separation

Carbon membranes for CO₂ separation

Hybrid membrane technologies for CO₂ separation processes

Before submission authors should carefully read over the journal's Author Guidelines, which are located at <http://www.lifescienceglobal.com/publish-with-us/guidelines-for-authors>. Prospective authors should submit an electronic copy of their complete manuscript through the journal Manuscript Tracking System at <http://www.lifescienceglobal.com/pms/index.php/jmst>
