



US008142746B2

(12) **United States Patent**
Reyes et al.

(10) **Patent No.:** **US 8,142,746 B2**
(45) **Date of Patent:** **Mar. 27, 2012**

(54) **SEPARATION OF CARBON DIOXIDE FROM METHANE UTILIZING ZEOLITIC IMIDAZOLATE FRAMEWORK MATERIALS**

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **12/321,752**

(22) Filed: **Jan. 23, 2009**

(65) **Prior Publication Data**

US 2009/0211441 A1 Aug. 27, 2009

Related U.S. Application Data

(60) Provisional application No. 61/066,550, filed on Feb. 21, 2008.

(51) **Int. Cl.**

B01D 53/04	(2006.01)
B01D 53/02	(2006.01)
B01D 53/047	(2006.01)
B01J 8/02	(2006.01)
C01B 33/20	(2006.01)
C01B 31/20	(2006.01)
C01B 39/02	(2006.01)
C01B 39/04	(2006.01)
C07C 9/04	(2006.01)

(52) **U.S. Cl.** **423/213.2; 423/220; 423/230; 423/235; 423/236; 423/239.1; 423/239.2; 423/245.1; 423/700; 423/701; 423/702; 423/704; 423/705; 423/706**

(58) **Field of Classification Search** **423/213.2, 423/220, 230, 235, 236, 239.1, 239.2, 245.1, 423/700, 701, 702, 704, 705, 706**
See application file for complete search history.

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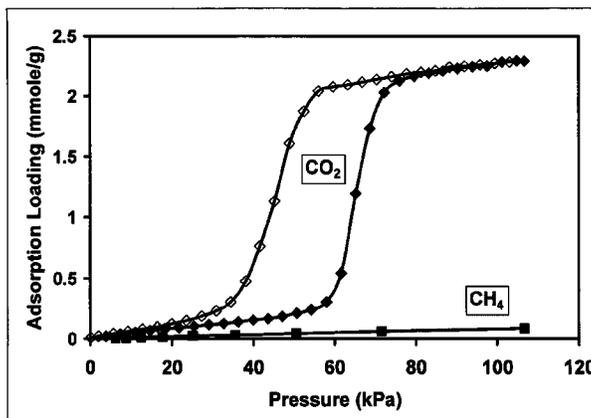
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(57) **ABSTRACT**

The present invention relates to the selective separation of carbon dioxide ("CO₂") from methane ("CH₄") in streams containing both carbon dioxide and methane utilizing a zeolitic imidazolate framework ("ZIF") material. Preferably, the stream to be separated is fed to the present process in a substantially gaseous phase. In preferred embodiments, the current invention is utilized in a process to separate carbon dioxide from natural gas streams preferably for sequestration of at least a portion of the carbon dioxide present in the natural gas.

21 Claims, 29 Drawing Sheets



ZIF-7 Isotherms for CO₂ AND CH₄ @ 301 K