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**Hodgkins et al.**

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(54) **MODIFIED ZEOLITES THAT INCLUDE HAFNIUM-CONTAINING ORGANOMETALLIC MOIETIES AND METHODS FOR MAKING SUCH**

(58) **Field of Classification Search**

CPC ..... C01B 33/26; C01B 33/28; C01B 33/2807; C01B 33/2869; C01B 39/04; C01B 39/38; C01B 39/40

See application file for complete search history.

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(57) **ABSTRACT**

Disclosed herein are modified zeolites and methods for making modified zeolites. In one or more embodiments disclosed herein, a modified zeolite may include a microporous framework including a plurality of micropores having diameters of less than or equal to 2 nm. The microporous framework includes at least silicon atoms and oxygen atoms. The modified zeolite may further include organometallic moieties each bonded to bridging oxygen atoms. The organometallic moieties include a hafnium atom. The hafnium atom is bonded to a bridging oxygen atom, and bridging oxygen atom bridges the hafnium atom of the organometallic moiety and a silicon atom of the microporous framework.

**20 Claims, 9 Drawing Sheets**

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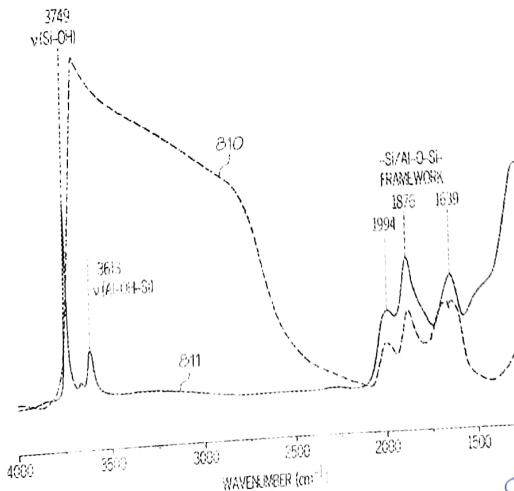
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