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## (12) United States Patent

#### Bull et al.

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See application file for complete search history.

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#### (57) **ABSTRACT**

Zeolite catalysts and systems and methods for preparing and using zeolite catalysts having the CHA crystal structure are disclosed. The catalysts can be used to remove nitrogen oxides from a gaseous medium across a broad temperature range and exhibit hydrothermal stable at high reaction temperatures. The zeolite catalysts include a zeolite carrier having a silica to alumina ratio from about 15:1 to about 256:1 and a copper to alumina ratio from about 0.25:1 to about 1:1.

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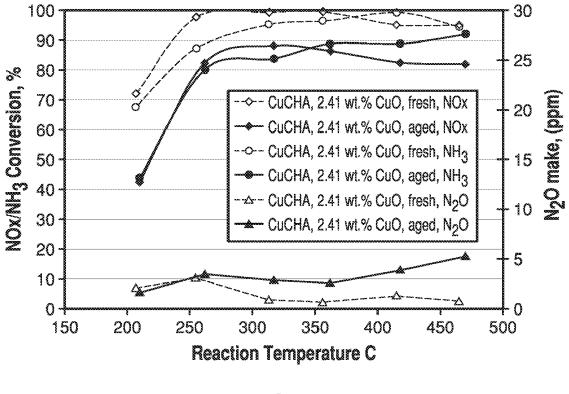
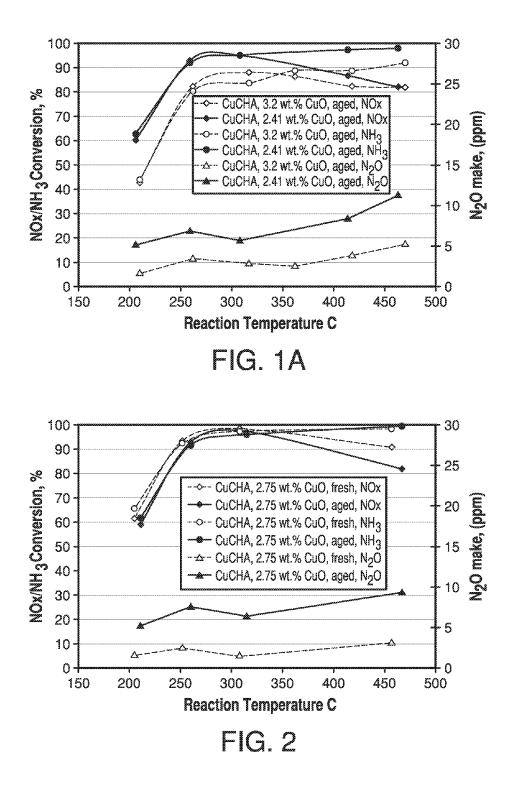


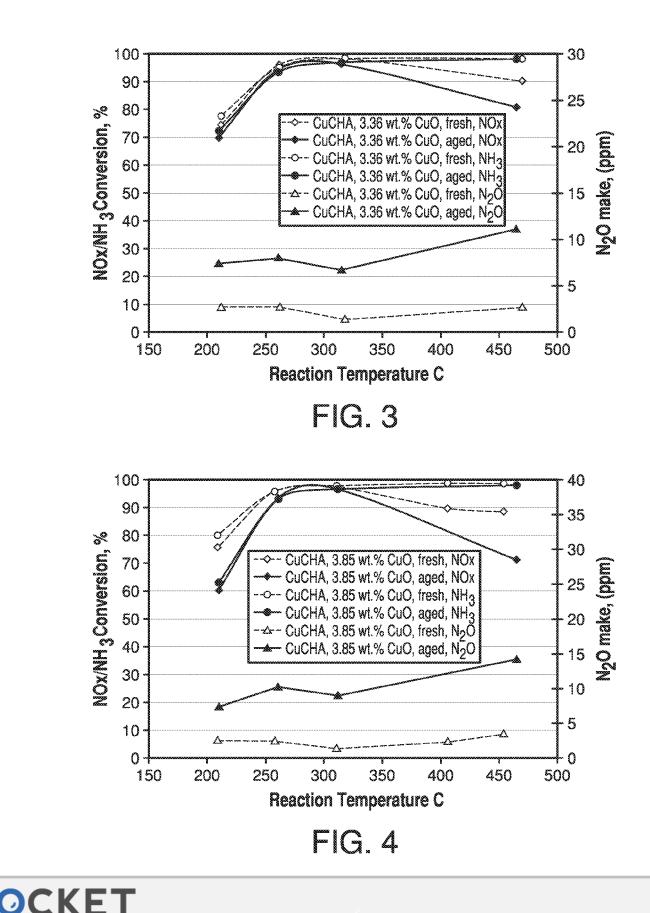
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