IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

U.S. Patent No. 7,601,662	U.S. Patent No. 8,404,203
Filed: Feb. 27, 2008	Filed: Jun. 8, 2009
Issued: Oct. 13, 2009	Issued: Mar. 26, 2013
Inventors: Ivor Bull, et al.	Inventors: Ivor Bull, et al.
Title: Copper CHA Zeolite Catalysts	Title: Processes for Reducing Nitrogen Oxides Using Copper CHA Zeolite Catalysts

---

DECLARATION OF DR. AHMAD MOINI IN IPR2015-01121, IPR2015-01123, IPR2015-01124, & IPR2015-01125

I, Dr. Ahmad Moini, make this declaration in connection with the above referenced *Inter Partes* Reviews of U.S. Patent Nos. 7,601,662 and 8,404,203.

I. Introduction

1. I am a Senior Expert and Research Fellow at BASF Corporation. I received a B.S. in Chemistry from Eastern Washington University in 1982 and a Ph.D. in Chemistry from Texas A&M University in 1986. I have been employed by BASF as a scientist for 9 years.

2. I am a co-inventor of the patented subject matter that is described and claimed in both the 662 and 203 Patents.

3. In the course of the previous *Inter Partes* Reexamination of the 662 Patent, I submitted two declarations in support of the patentability of the '662 patent. My first declaration was submitted to the United States Patent and Trademark Office ("USPTO") on February 9, 2011. My second declaration was submitted to the USPTO on December 18, 2011.

II. BASF's CuCHA SCR Catalyst

4. BASF Corporation sells a copper loaded aluminosilicate CHA ("CuCHA") zeolite catalyst for use in the selective catalytic reduction of nitrogen oxides in the exhaust treatment system of diesel engines. I am familiar with the product specification for the commercially available CuCHA catalyst sold by BASF. The product specification details the minimums, maximums, and targets for the CHA content, SiO_2/Al_2O_3 molar ratio ("SAR") and the copper content, expressed as weight percentage CuO. The final CuCHA catalyst product that is sold by BASF to customers is made according to the product specification.

5. The product specification for the CuCHA catalyst requires that the final zeolite product, prior to Cu exchange, have a % crystallinity (from X-ray diffraction), relative to a reference CHA material, between [redacted] This tolerance shows that the zeolite is preferably a pure, highly crystalline CHA zeolite, which is an aluminosilicate zeolite.

6. The product specification for the CuCHA catalyst requires that the final product have a SAR between [redacted] with a target SAR of [redacted]

7. The product specification for the CuCHA catalyst requires that the final product have a copper content, expressed as weight percentage CuO between [redacted], with a target of [redacted]

8. The Cu/Al ratio of the product can be computed based on the SAR and copper weight percentage. For example, with a SAR of [redacted] and CuO weight percentage of [redacted] the Cu/Al ratio is [redacted] The calculation for this Cu/Al ratio is detailed below:

- Since the copper content has been expressed as CuO, this value is first converted to the corresponding amount of Cu. This is done by dividing [redacted] CuO by 79.55, thus obtaining moles CuO, and then multiplying by 63.55, thus obtaining [redacted] Cu.
- Assuming 100 grams of the filter cake, there would be [redacted] of copper and [redacted] of $Si_{31}Al_2O_{66}$. [redacted] of Cu divided by 63.55 g/mol for Cu results in [redacted] mol of Cu in the sample.
- Since $Si_{31}Al_2O_{66}$ has a molar mass of 1980.44, [redacted] of $Si_{31}Al_2O_{66}$ results in [redacted] mol $Si_{31}Al_2O_{66}$. Therefore, there would be [redacted] mol of Al in this sample.

- Dividing the [redacted] mol of Cu by 0.0984 mol of Al, gives the Cu/Al ratio [redacted]
- It should be noted that the molar mass of the zeolite is an approximation, since there may be small amounts of H^+ and/or alkali ions that charge balance the aluminum sites not satisfied by the copper content. These residual amounts will not have a significant impact in the above calculations.

9. A final product that meets the "target" specifications includes an aluminosilicate CHA zeolite that has a SAR of [redacted] and a Cu/Al ratio of [redacted]

10. Utilizing the same chemical and mathematical formulas as detailed above, adjusted as appropriate for different SAR or copper weight percent, the following table shows the calculated Cu/Al contents of various embodying filter cakes that can be made according to the product specification.

SAR	CuO Weight %	Cu/Al Ratio
[redacted] (target)	[redacted] (minimum)	[redacted]
[redacted] (target)	[redacted] (maximum)	[redacted]
[redacted] (maximum)	[redacted] (maximum)	[redacted]
[redacted] (minimum)	[redacted] (maximum)	[redacted]
[redacted] (target)	[redacted] (target)	[redacted]

11. The CuCHA catalyst is sold as a substrate that is coated with the CuCHA material. The type of substrate on which the CuCHA catalyst is coated includes both flow through substrates and wall flow filters. The CuCHA catalyst is

specifically made and intended for use in the selective catalytic reduction of nitrogen oxides in the presence of ammonia (*i.e.*, NH_3 SCR of NOx) in the exhaust treatment system of a diesel engine. The catalyst is disposed downstream of an injector that adds urea to the gas stream (and the urea is then converted to ammonia). The customers who purchase the CuCHA catalyst product do so because of the excellent properties of CuCHA material coated on the substrate.

III. Availability for Cross-Examination

12. I realize that this signed declaration will be filed as evidence in a contested case before the Patent Trial and Appeal Board of the United States Patent and Trademark Office. I also realize that I may be subject to cross examination in the case within the United States. If such cross examination is required, I will appear for cross examination within the United States during the time allotted.

IV. Jurat

13. I declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.

14. I declare under penalty of perjury that the foregoing is true and correct.

DOCKET ALARM

Explore Litigation Insights

Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

Real-Time Litigation Alerts

Keep your litigation team up-to-date with **real-time alerts** and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

Advanced Docket Research

With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

Analytics At Your Fingertips

Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

LAW FIRMS
Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

FINANCIAL INSTITUTIONS
Litigation and bankruptcy checks for companies and debtors.

E-DISCOVERY AND LEGAL VENDORS
Sync your system to PACER to automate legal marketing.