ThalesNano
Catalyst Screening and Profiling

ThalesNano is already well-known for its novel solutions in revolutionizing heterogeneous catalytic hydrogenations with its H-Cube® hydrogenator, while the expanded Cube series of fixed bed reactors offers a broad range of chemistry applications. With a wide portfolio of different catalysts available in our proprietary CatCart® catalyst cartridges ThalesNano is also heavily involved in the development, of novel catalysts, screening and profiling of catalysts.

FEATURES

The Catalyst Screening and Profiling Program gives clients access to our expertise and novel in-house developed technologies, in which we are able to rapidly screen and profile catalyst activity in a broad range of different condition.
Our business model is to take client problems and work together with them to find the optimal catalyst and reaction conditions for improved reaction performance.

The program includes:

- Rapid screening of over 80 off the shelf catalysts from the ThalesNano CatCart® portfolio (available for heterogenous hydrogenations and a broad range of other gaseous and non-gaseous reactions)
- Stereo-/enantioselective catalysis, biocatalysis
- Screening and Profiling of client specified catalysts
- Catalyst Immobilization
- Research into alternative catalysts outside of ThalesNano own portfolio
- Joint development of tailor-made catalysts
- Full optimization of the reaction parameters and conditions

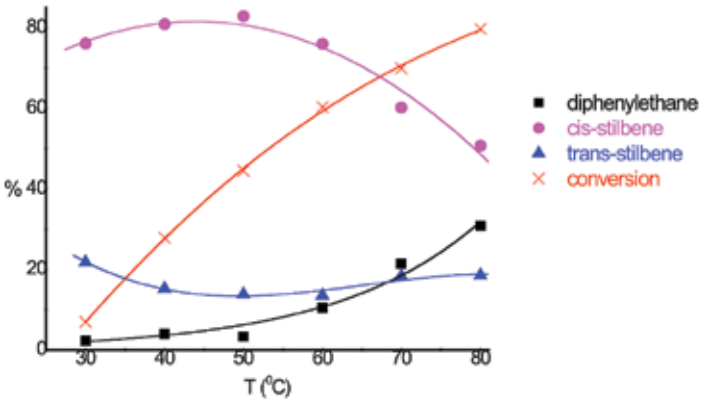
ADVANTAGES

The fully automated ThalesNano Cube series of reactors enable ultra-fast reaction optimization, even within minutes allowing a vast array of catalysts to be screened in a short period of time.

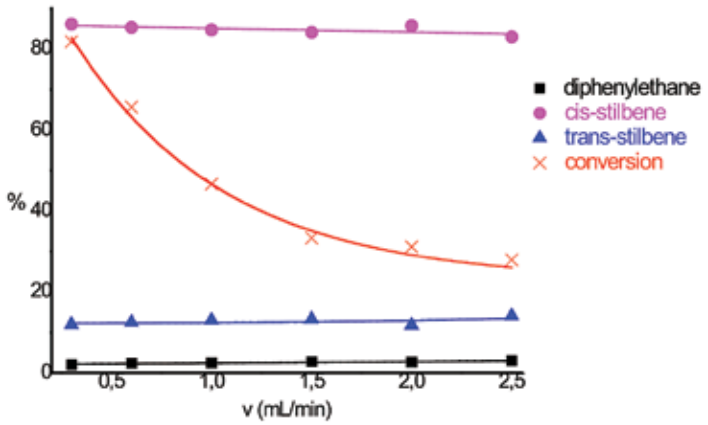
The microflow process gives detailed control over the reaction conditions, allowing enabling highly reproducible results.
The ThalesNano team has over 15 years experience in contract research projects, with a highly trained team of experts.

CATALYST SCREENING AND PROFILING APPLICATION NOTES

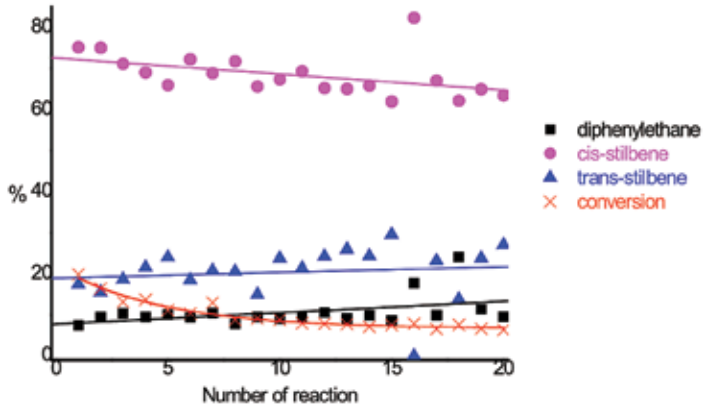
Many soluble transition metal complexes show extremely high catalytic activity and chemo- and stereoselectivity in various catalytic reactions including hydrogenation. Heterogeneous catalysts have great advantages, and in a flow system they show very high activity.



Example 1. [3]
Quick optimization of the temperature on the stereoselective hydrogenation of diphenylacetylene with [{$RuCl_2$(*m*tppms)$_2$}$_2$] anchored on DEAE-Molselect. Flow rate = 1 mL/min, p(H_2) = 30 bar.



Example 2. [3]
Quick optimization of the flow rate on the stereoslective hydrogenation of diphenylacetylene with [{$RuCl_2$(*m*tppms)$_2$}$_2$] anchored on DEAE-Molselect. T = 50°C, p(H_2) = 30 bar.



Example 3. [3]
Stability of a novel [{$RuCl_2$(*m*tppms)$_2$}$_2$] catalyst anchored on Lewatit MonoPlus in the hydrogenation of diphenylacetylene. T = 30°C, p(H_2) = 30 bar.

If you require further information on the instrument, or would like to have a demonstration scheduled, please contact:

ThalesNano Inc.
Záhony u. 7.
H-1031 Budapest, Hungary
Tel: (36 1) 880 8500
Fax: (36 1) 880 8501

Thales LLC,
Princeton, NJ, USA
Tel: (1) 732 274 3388

E-mail: info@thalesnano.com
www.thalesnano.com

References

[1] R. V. Jones, L. Godorhazy, N. Varga, D. Szalay, L. Ürge, F. Darvas, *J. Combi. Chem.* 8 (**2005**) 110.
[2] B. Desai, O. Kappe, *J. Combi. Chem.* 7 (**2005**) 641.
[3] H. H. Horváth, G. Papp, C. Csajági, F. Joó, *Cat. Commun.* (**2007**) 442-446.
[4] S. Saaby, K. R. Knudsen, M. Ladlow, S. V. Ley, *Chem. Commun.* (**2005**) 2909.
[4] I. T. Horváth (Ed.-in-Chief), *Encyclopedia of Catalysis*, Wiley, New York, **2002**.
[5] B. R. James, *Homogeneous Hydrogenation*, Wiley, New York, **1973**.
[6] P. A. Chaloner, M. A. Esteruleas, F. Joó, L. A. Oro, *Homogeneous Hydrogenation*, Kluwer, Dordrecht, **1994**.