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Journal of Catalysis 234 (2005) 240
JOURNAL OF CATALYSIS
www.elsevier.com/locate/jcat

Letter to the Editor

In a recent paper in this Journal, the authors state "It has been found that the optimal catalyst for ammonia synthesis is never the optimal catalyst for ammonia decomposition, which is almost counter-intuitive in catalysis" [1]. I would like to emphasize that this result is NOT counter-intuitive, because this topic was addressed forty years ago by Boudart [2]. In his derivation of a kinetic representation for the "best" catalyst, he also obtained a "corollary which is of great practice significance", i.e., "far from equilibrium, the most active catalyst will not necessarily be the same for both the forward and the reverse reactions", and the reason for this conclusion, which was based on a general kinetics argument, was given [2]. Consequently, one would anticipate precisely the results reported in this paper, which provide a quantitative verification of Boudart's corollary based on recent progress in theoretical models.

References

[1] A. Boisen, S. Dahl, J.K. Norskov, C.H. Christensen, J. Catal. 230 (2005) 309.
[2] M. Boudart, Kinetics of Chemical Processes, Prentice-Hall, Englewood Cliffs, NJ, 1968, p. 203.

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Available online 19 July 2005

0021-9517/$ – see front matter
doi:10.1016/j.jcat.2005.05.020