

The Nature of Iron Sulfides during Catalytic Reactions: Reply to Smith, Hinckley, Zahraa, Nishizawa, Saporoschenko, and Shiley

I would like to reply to the comments by Smith, Hinckley, Zahraa, Nishizawa, Saporoschenko, and Shiley. As the authors state we did not clearly specify the form of iron sulfide used in our experiments. We chose not to be specific because of the complexity of the Fe/S phase diagram near FeS_x (the reference to troilite in Table 3, page 437, is in error, that in Table 1, page 432, is correct). Because of this difficulty the determination of the exact phase present was left for future study. Therefore, we have no disagreement with Smith *et al.*'s interpretation. However, we would like to caution the authors that interpretation based on *recovered* catalysts can be misleading. The crystal structures one sees at room temperature after a high-temperature reaction are

not necessarily those of the high-temperature phase at reaction temperature. This is particularly true of the Fe/S system which has a quite complex phase diagram (1).

REFERENCE

1. Ribbe, P. H. (Ed.), "Short Course Notes on Sulfide Mineralogy," CS-25. Mineralogical Society of America, 1974.

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