

Development of an effective fusion procedure for catalysts

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The petrochemical industry needs high quality catalysts. For example, the Fluid Catalytic Cracking (FCC) depends on catalysts (Zeolite Y class) to transform long chain of alkanes into short branched alkanes. The XRF analysis, combined with borate fusion, is commonly used in catalyst production laboratories because it provides fast and accurate analysis. During the fusion, sometimes the flux runs over the platinum crucible, because the water contained in zeolites is variable. Moreover, since the zeolite composition is variable, beads may contain undissolved particles.

New advances in borate fusion allow publishing a robust fusion procedure for zeolite and special attention is paid to minor elements. Most of the work concerns the fusion of the reference material RM 8850 which is Zeolite Y. This study also shows that the new fusion procedure can be applied to the reference material RM 8851 (Zeolite A) and RM 8852 (Ammonium ZSM-5 Zeolite), which are classes used in detergent formulation. The XRF method precision is evaluated by calculating the standard deviation of the net intensities over Si, Al, Na, and Fe. The method has yielded repeatable and precise results for the wide range of zeolite compositions.