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Influence of the Co to Mo molar ratio on active phase formation of ammonia synthesis catalysts: in-situ XRPD analysis

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Transition-metal nitrides tend to form structures with variable compositions. The catalytic activity of cobalt molybdenum nitrides in ammonia synthesis is highly influenced by the composition of the catalyst. Three mixtures of cobalt(II) nitrate and ammonium heptamolybdate with a controlled molar ratio of Co:Mo (2:1, 1:1, 1:2) were prepared by simple mixing. The obtained mixtures were reduced under an ammonia atmosphere with a simultaneous collection of powder X-ray diffraction patterns.

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