C. BOLM, R. MOCCI, C. SCHUMACHER, M. TURBERG, F. PUCETTI, J. G. HERNÁNDEZ* (RWTH AACHEN, GERMANY; CITTADELLA UNIVERSITARIA, MONSERRATO AND UNIVERSITY OF FIRENZE, SESTO FIORENTINO, ITALY)

Mechanochemical Activation of Iron Cyano Complexes: A Prebiotic Impact Scenario for the Synthesis of α-Amino Acid Derivatives


Mechanochemical Generation of HCN from K₃[Fe(CN)₆]: A Novel Strecker Protocol

Significance: A Strecker reaction of carbonyl compounds, primary amines, and potassium ferricyanide was carried out in the presence of SiO₂ under ball-milling conditions to give the corresponding α-amionitriles in 56–73% yield (eq. 1, 11 examples). The hydration of α-amionitrile A also proceeded under ball-milling conditions to afford the corresponding amino amide in 51% yield (eq. 2).

Comment: In situ generation of HCN was found to take place through mechanochemical activation of potassium ferricyanide [K₃[Fe(CN)₆]] by ball-milling in the presence of SiO₂. The resulting HCN was trapped in situ by a Strecker reaction with benzaldehyde and benzylamine to give A.