Promotional Effect CO_2 in the Catalytic Liquid-phase Oxidation of Toluene over Fe (III)-mesoporous carbon nitride

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Liquid Phase solvent free catalytic oxidation of Toluene was investigated over transition metal doped Mesoporous Carbon nitride using O_2 as a terminal oxidant. A series of metal-doped graphitic carbon nitride catalyst (Co-, Fe-, Mn-, (Co/Mn)-, and Ni-UF-MCN) were successfully synthesized by wet incipient impregnation method. It was found that the Fe (III)-doped graphitic UF-MCN catalyst was the most efficient catalytic system and exhibited a highest conversion of 6% with selectivity's of (45%) Benzaldehyde and (45%) Benzoic acid. The Co-Presence of CO_2 under analogous conditions showed enhancement in conversions (12%) and elevated selectivity's (87%) towards Benzoic acid with minor product as Benzaldehyde.