# Transition Metal Tirggered Heterogeneous Pd Catalyzed Hydrogenation vs. Selective Methylation of Aromatic Amines with Directly Utilizing of Formic Acid

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In this work, PdAg heterogenized nano-alloy supported on $Fe_3O_4$/Nitrogen-doped graphen(N-rGO) selectively catalyzed the *N*-monomethylation and *N,N*-dimethylation of aromatic amines with directly utilizing of formic acid(FA) as the $C_1$ building block and hydrogen source in single step. Additionally, the modified Pd surface property on the N-rGO by changing the ratio of Pd and Ag leaded to the swtich between aniline methylation to aromatic ring hydrgenation with formic acid under solvothermal reaction.