SUPPORTING INFORMATION

Process Intensification With Bifunctional Heterogeneous Catalysts: Selective One Pot Synthesis Of 2'-Aminochalcones

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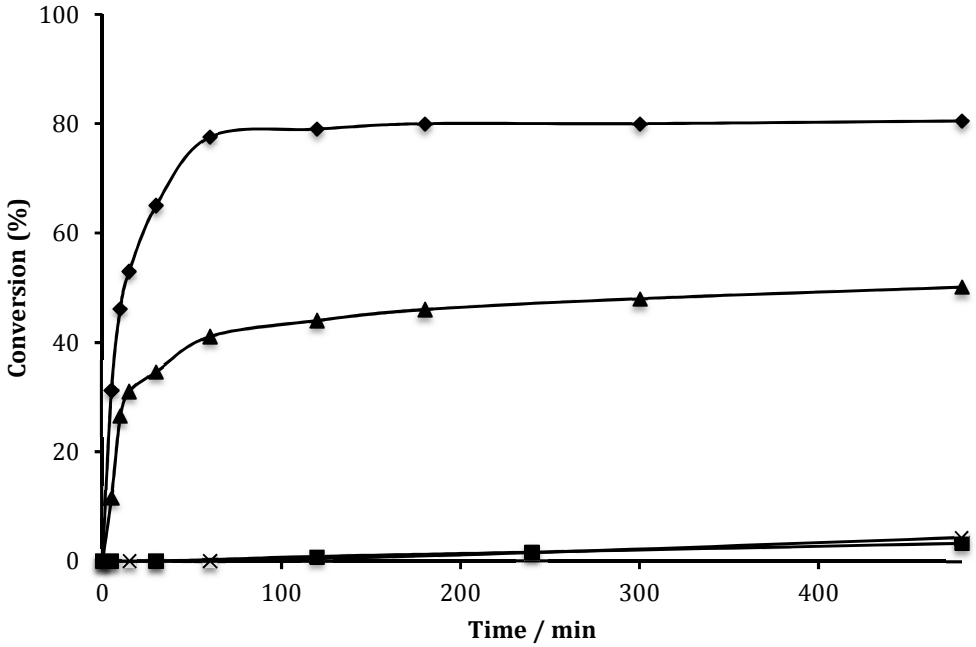

Figure S1. Kinetics of condensation reaction with HTc (●), HTr (▲) and their respective reuses after washing with soxhlet apparatus HTc reused (■), HTr reused (✕).

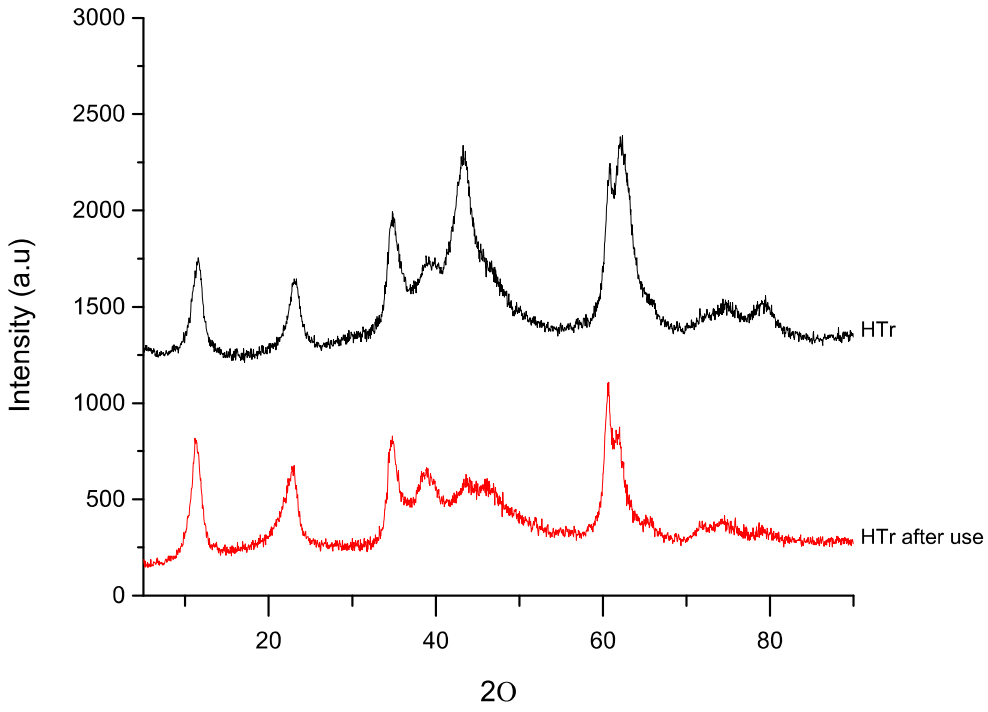

Figure S2. Powder X-ray diffraction (XRD) patters of the rehydrated Al-Mg mixed oxide before and after use in the condensation reaction

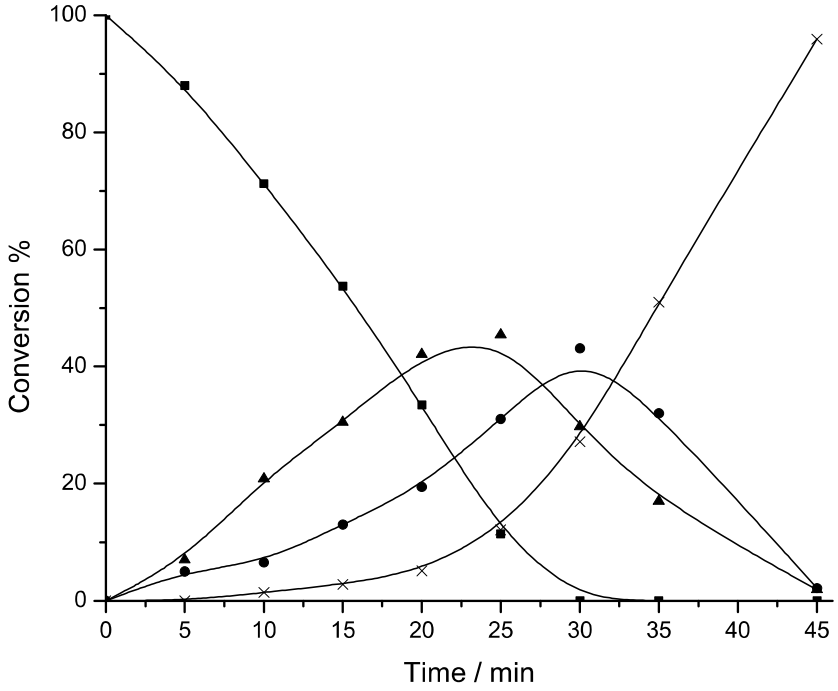

Figure S3. Kinetic curve of the hydrogenation of 2'-nitrochalcone using 0.5wt%Pd-MgO as catalyst, corresponding to Table 3, entry 1. ■ 2'-nitrochalcone, ▲ 2'-nitrosochalcone, ● 2'-aminochalcone, ✕1-(2-aminophenyl)-3-phenylpropan-1-one. Reaction conditions: 2'-nitrochalcone (0.5mmol), *o*-xylene (0.5mL), 9 bar of H_2

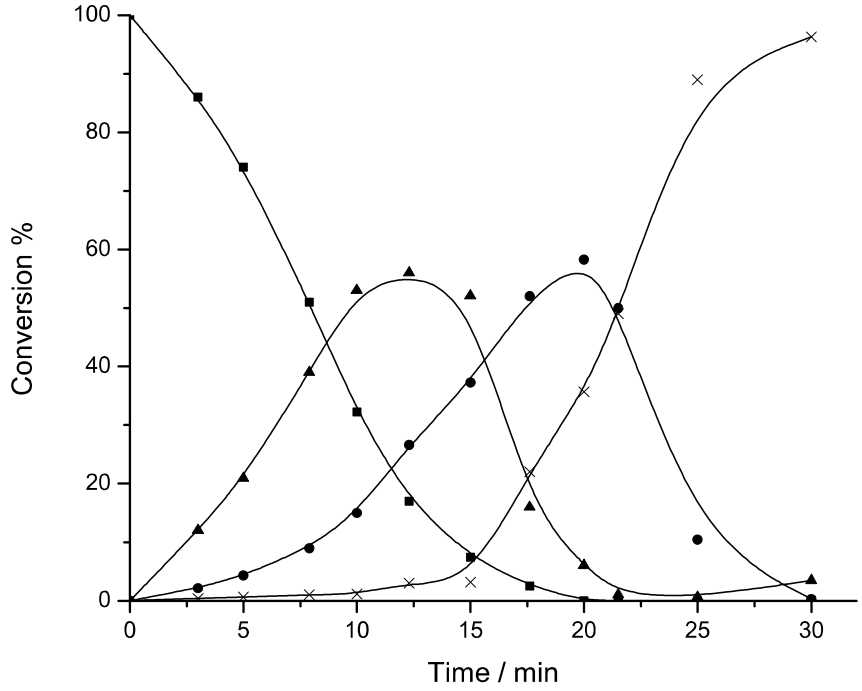

Figure S4. Kinetic curve of the hydrogenation of 2'-nitrochalcone using 1wt%Pt-MgO as catalyst corresponding to Table 3, entry 2. ■ 2'-nitrochalcone, ▲ 2'-nitrosochalcone, ● 2'-aminochalcone, ✕1-(2-aminophenyl)-3-phenylpropan-1-one. Reaction conditions: 2'-nitrochalcone (0.5mmol), *o*-xylene (0.5mL), 9 bar of H_2

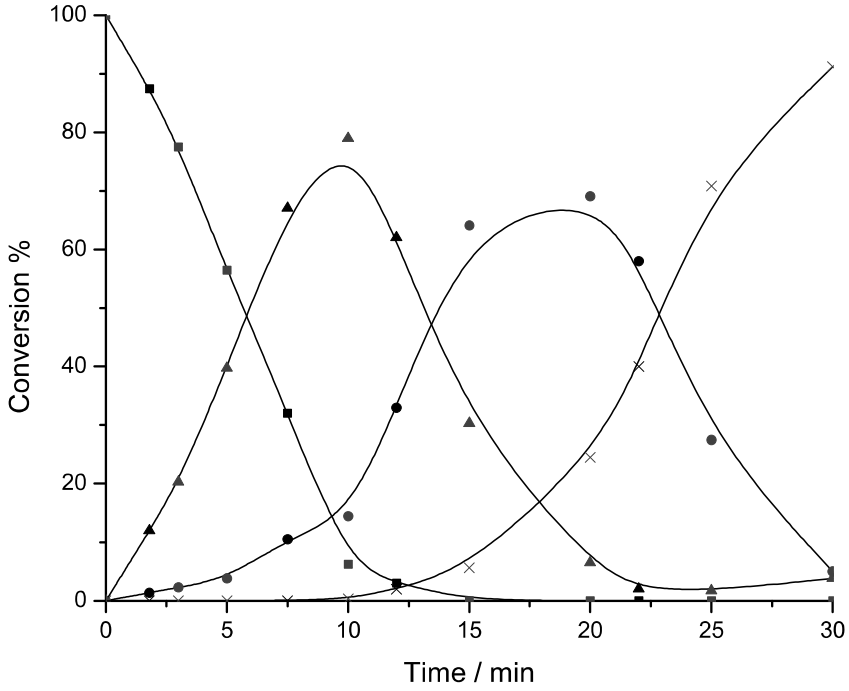

Figure S5. Kinetic curve of the hydrogenation of 2'-nitrochalcone using 0.5wt%Pt-MgO as catalyst corresponding to Table 3, entry 3. ■ 2'-nitrochalcone, ▲ 2'-nitrosochalcone, ● 2'-aminochalcone, ✕1-(2-aminophenyl)-3-phenylpropan-1-one. Reaction conditions: 2'-nitrochalcone (0.5mmol), *o*-xylene (0.5mL), 9 bar of H_2

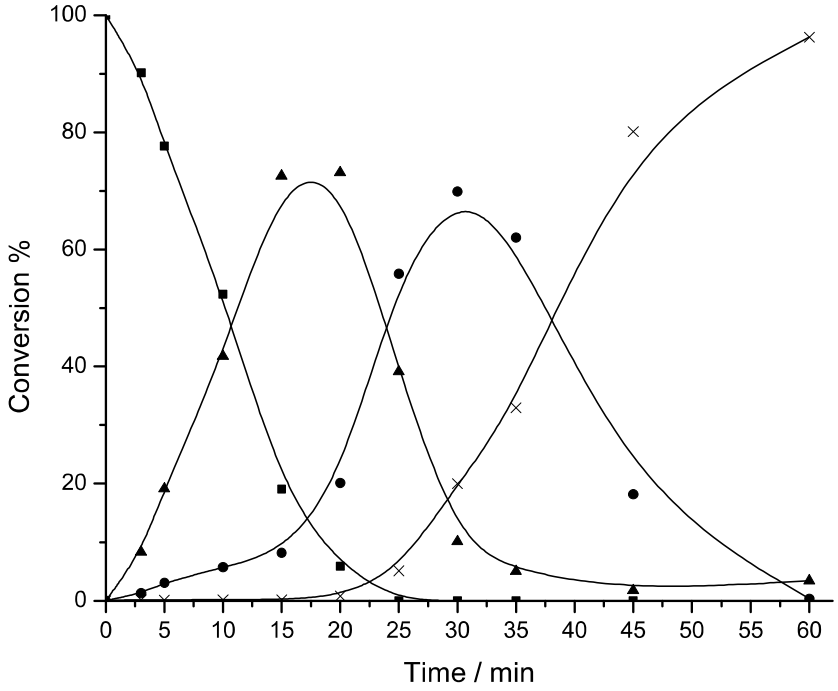

Figure S6. Kinetic curve of the hydrogenation of 2'-nitrochalcone using 0.2wt%Pt-MgO as catalyst corresponding to Table 3, entry 4. ■ 2'-nitrochalcone, ▲ 2'-nitrosochalcone, ● 2'-aminochalcone, ✕1-(2-aminophenyl)-3-phenylpropan-1-one. Reaction conditions: 2'-nitrochalcone (0.5mmol), *o*-xylene (0.5mL), 9 bar of H_2

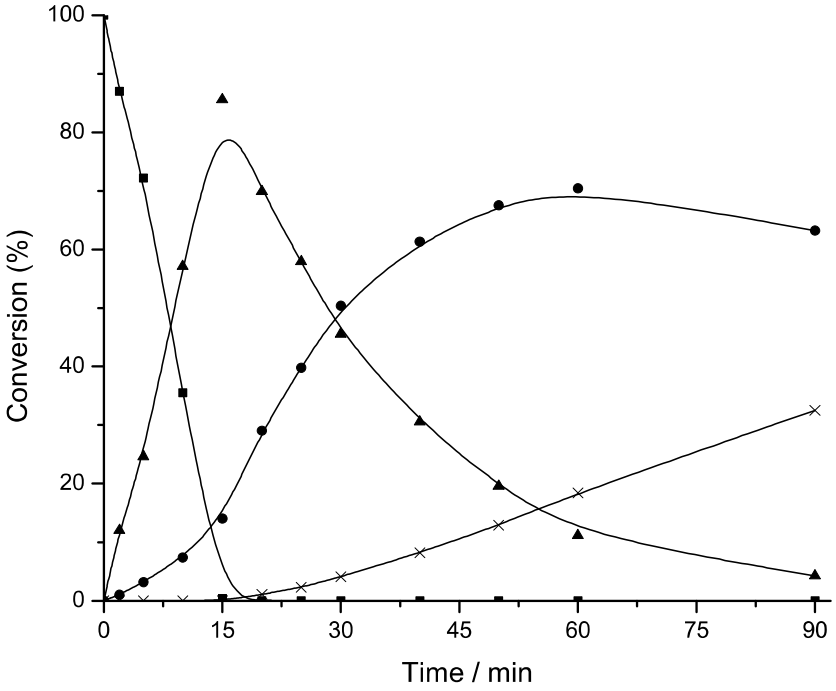

Figure S7. Kinetic curve of the hydrogenation of 2'-nitrochalcone using 0.1wt%Pt-MgO as catalyst corresponding to Table 3, entry 5. ■ 2'-nitrochalcone, ▲ 2'-nitrosochalcone, ● 2'-aminochalcone, ✕1-(2-aminophenyl)-3-phenylpropan-1-one. Reaction conditions: 2'-nitrochalcone (0.5mmol), *o*-xylene (0.5mL), 9 bar of H_2

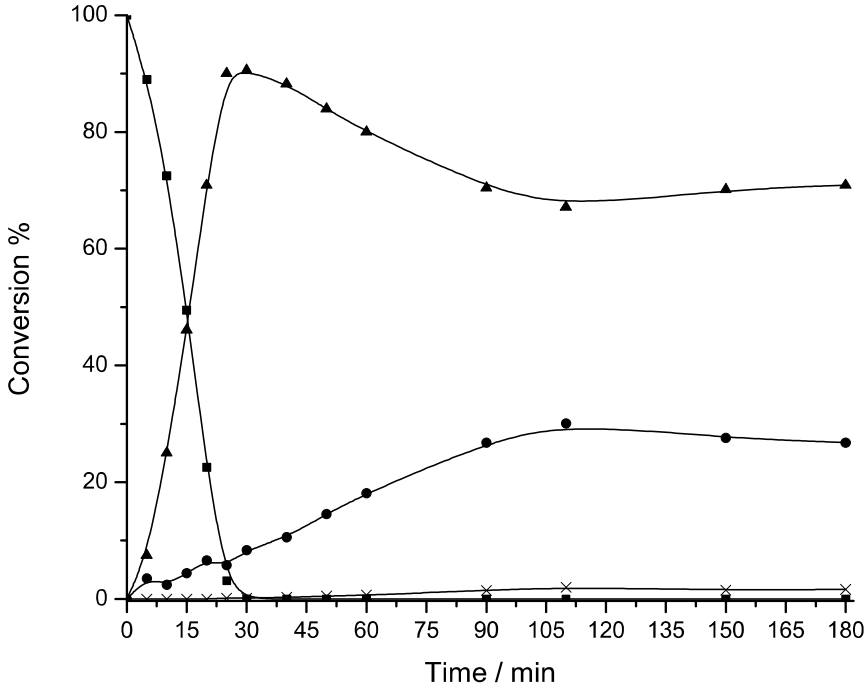

Figure S8. Kinetic curve of the hydrogenation of 2'-nitrochalcone using 0.05wt%Pt-MgO as catalyst corresponding to Table 3, entry 6. ■ 2'-nitrochalcone, ▲ 2'-nitrosochalcone, ● 2'-aminochalcone, ✕1-(2-aminophenyl)-3-phenylpropan-1-one. Reaction conditions: 2'-nitrochalcone (0.5mmol), *o*-xylene (0.5mL), 9 bar of H_2

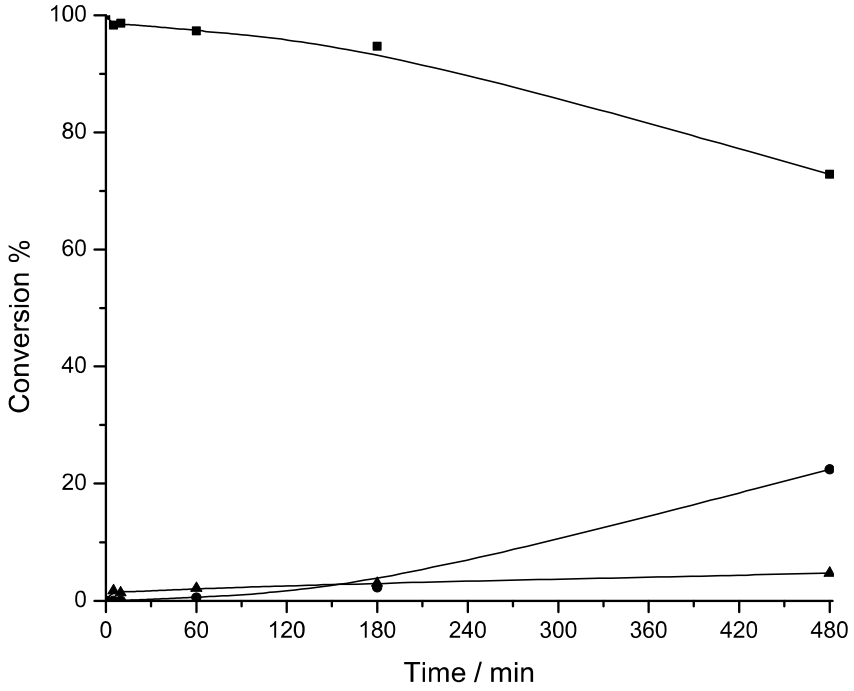

Figure S9. Kinetic curve of the hydrogenation of 2'-nitrochalcone using 0.5wt%Au-MgO as catalyst corresponding to Table 3, entry 7. ■ 2'-nitrochalcone, ▲ 2'-nitrosochalcone, ● 2'-aminochalcone. Reaction conditions: 2'-nitrochalcone (0.5mmol), *o*-xylene (0.5mL), 9 bar of H_2

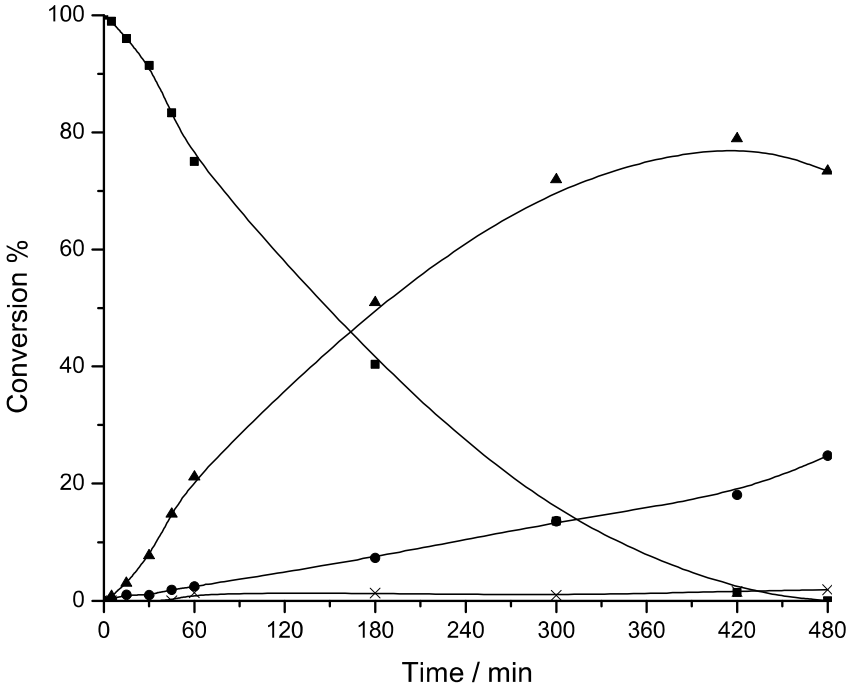

Figure S10. Kinetic curve of the hydrogenation of 2'-nitrochalcone using 1wt%Au-0.01wt%Pt-MgO as catalyst corresponding to Table 3, entry 8. ■ 2'-nitrochalcone, ▲ 2'-nitrosochalcone, ● 2'-aminochalcone, ✕1-(2-aminophenyl)-3-phenylpropan-1-one. Reaction conditions: 2'-nitrochalcone (0.5mmol), *o*-xylene (0.5mL), 9 bar of H_2

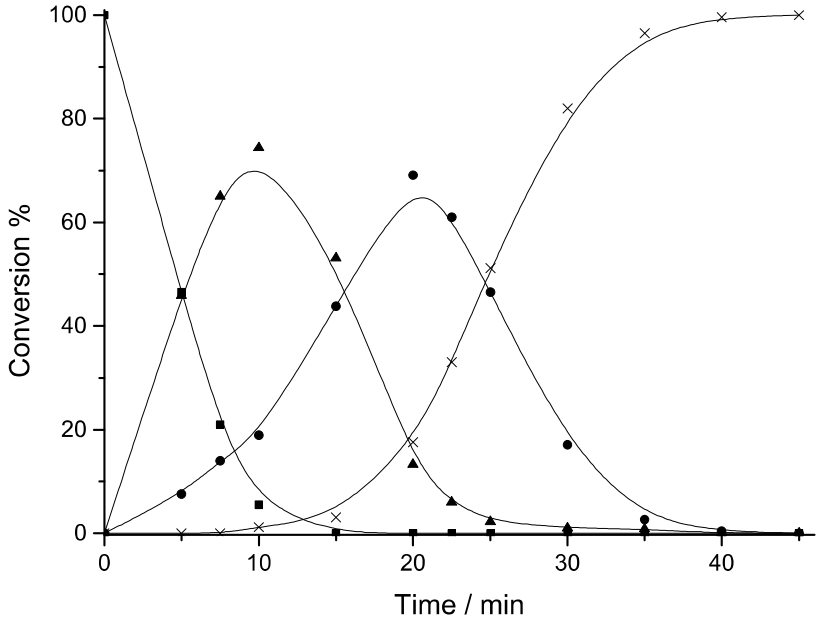

Figure S11. Kinetic curve of the hydrogenation of 2'-nitrochalcone using 0.7wt%Au-0.45wt%Pt-MgO as catalyst, corresponding to Table 3, entry 9. ■ 2'-nitrochalcone, ▲ 2'-nitrosochalcone, ● 2'-aminochalcone, ✕1-(2-aminophenyl)-3-phenylpropan-1-one. Reaction conditions: 2'-nitrochalcone (0.5mmol), *o*-xylene (0.5mL), 9 bar of H_2.

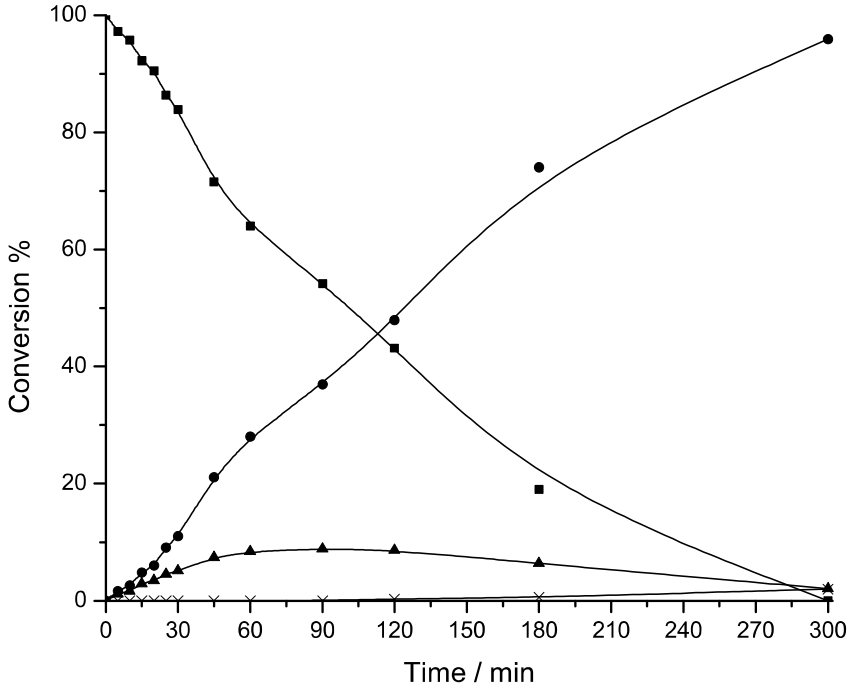

Figure S12. Kinetic curve of the hydrogenation of 2'-nitrochalcone using Au-TiO_2 as catalyst corresponding to Table 3, entry 10. ■ 2'-nitrochalcone, ▲ 2'-nitrosochalcone, ● 2'-aminochalcone, ✕1-(2-aminophenyl)-3-phenylpropan-1-one. Reaction conditions: 2'-nitrochalcone (0.5mmol), *o*-xylene (0.5mL), 9 bar of H_2

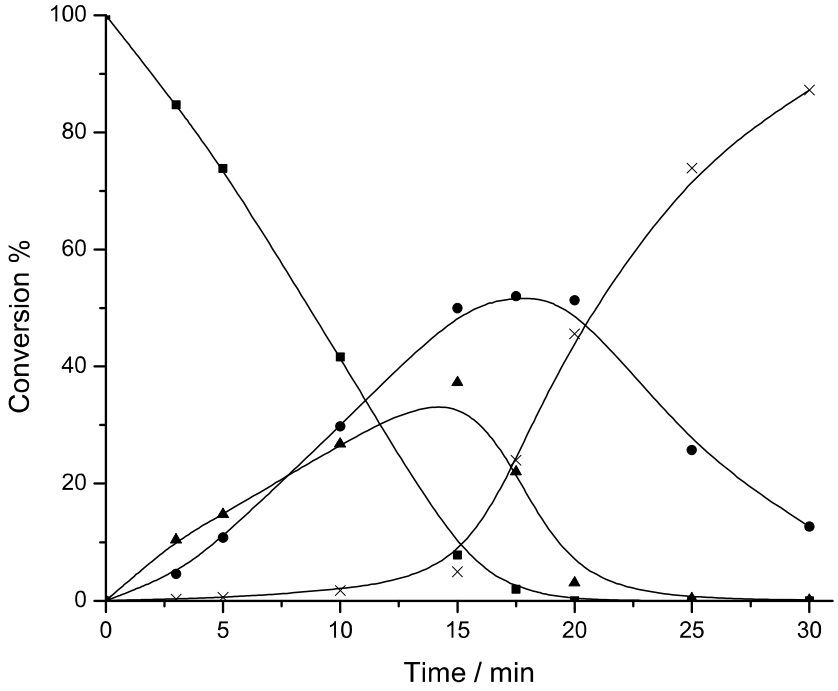

Figure S13. Kinetic curve of the hydrogenation of 2'-nitrochalcone using 0.2wt%Pt-Al_2O_3 as catalys corresponding to Table 3, entry 11. ■ 2'-nitrochalcone, ▲ 2'-nitrosochalcone, ● 2'-aminochalcone, ✕1-(2-aminophenyl)-3-phenylpropan-1-one. Reaction conditions: 2'-nitrochalcone (0.5mmol), *o*-xylene (0.5mL), 9 bar of H_2

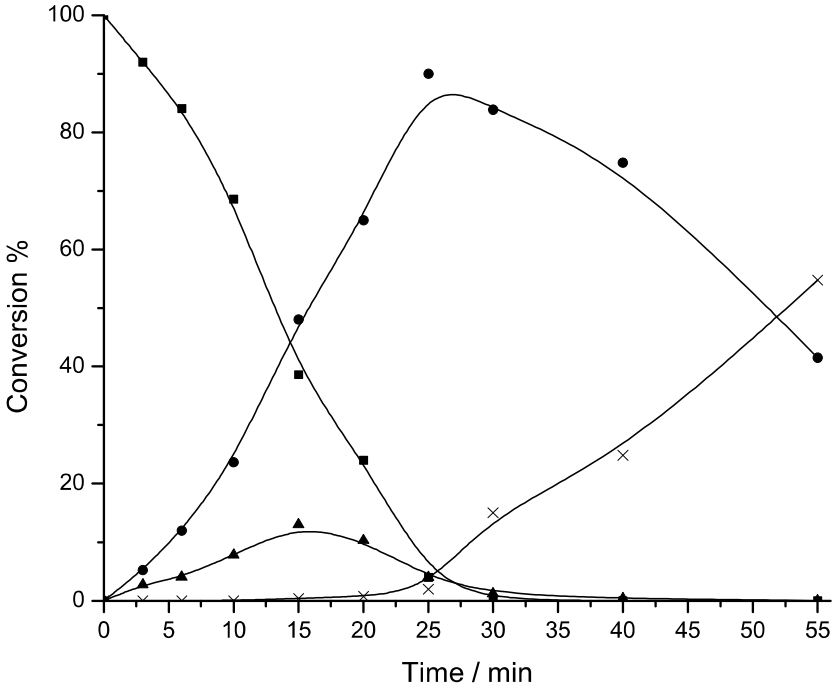

Figure S14. Kinetic curve of the hydrogenation of 2'-nitrochalcone using 0.2wt%Pt-TiO_2 as catalyst corresponding to Table 3, entry 12. ■ 2'-nitrochalcone, ▲ 2'-nitrosochalcone, ● 2'-aminochalcone, ✕1-(2-aminophenyl)-3-phenylpropan-1-one. Reaction conditions: 2'-nitrochalcone (0.5mmol), *o*-xylene (0.5mL), 9 bar of H_2

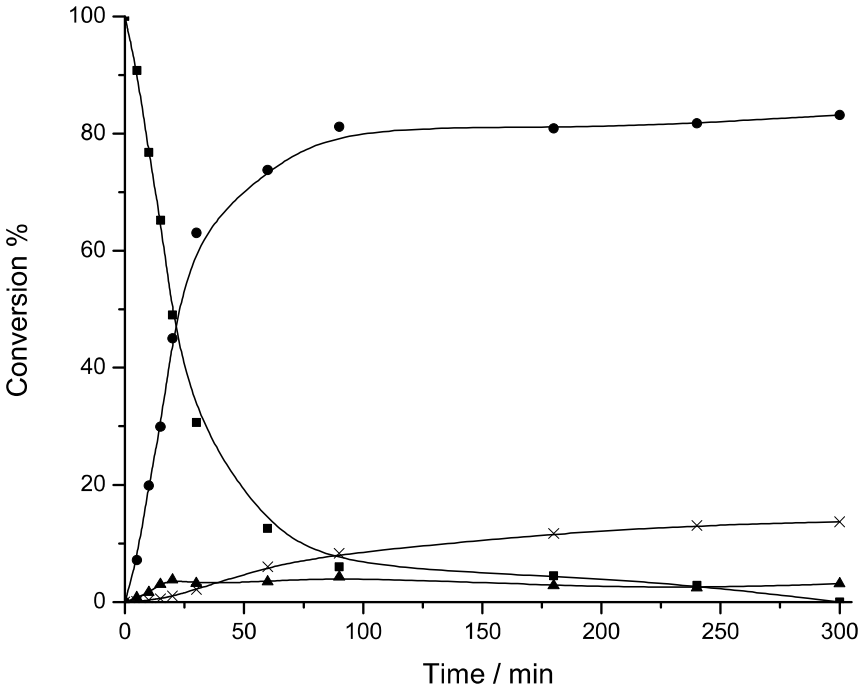

Figure S15. Kinetic curve of the hydrogenation of 2'-nitrochalcone using 0.2wt%Pt-TiO_2nd (reduced at 200 ^oC) as catalyst corresponding to Table 3, entry 13. ■ 2'-nitrochalcone, ▲ 2'-nitrosochalcone, ● 2'-aminochalcone, ✕1-(2-aminophenyl)-3-phenylpropan-1-one. Reaction conditions: 2'-nitrochalcone (0.5mmol), *o*-xylene (0.5mL), 9 bar of H_2.

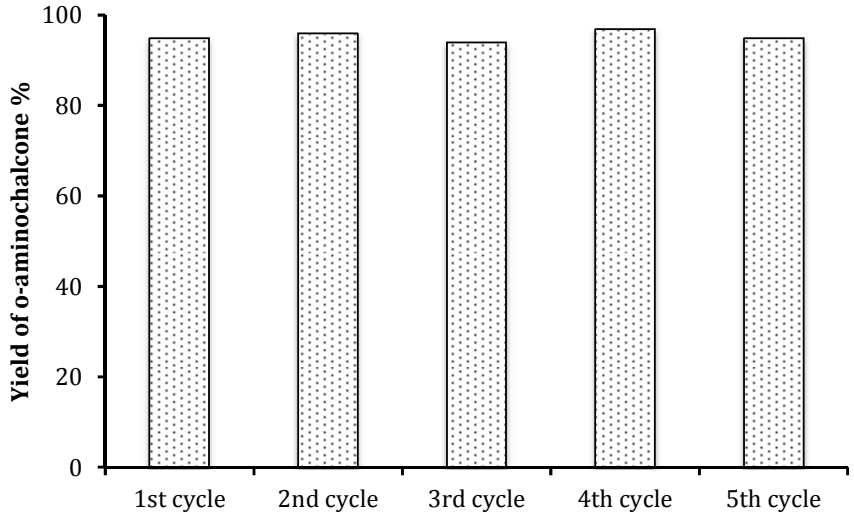

Figure S16. Reuses of Pt-TiO_2 in the hydrogenation of 2′-nitrochalcone after catalyst calcination at 450 ^{o}C in reductive atmosphere. Reaction conditions: S/C=2700, 0.5 mmol of 2′-nitrochalcone, 0.5mL *o*-xylene, 70 ^{o}C, 9 bar H_2.

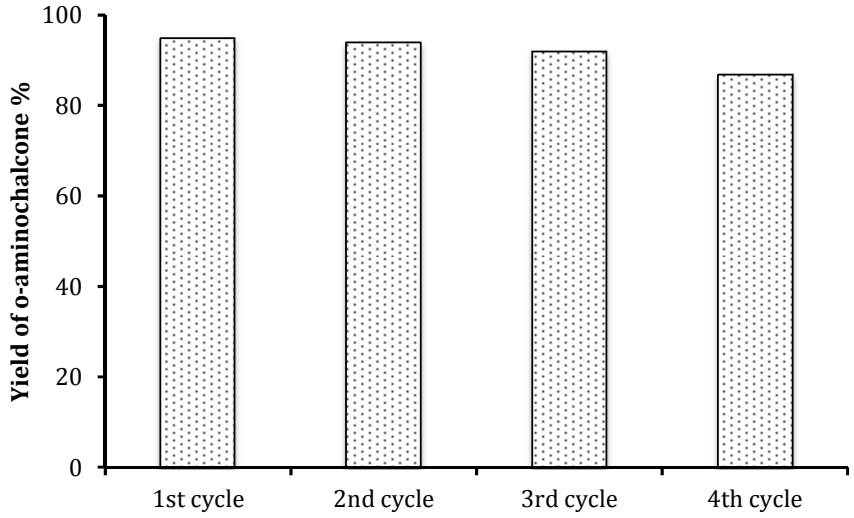

Figure S17. Reuse of Pt-TiO_2 in the hydrogenation of 2´-nitrochalcone after washing the catalyst with dichloromethane. Reaction conditions: S/C=2700, 0.5 mmol of 2´-nitrochalcone, 70 ^{o}C, 9 bar H_2.

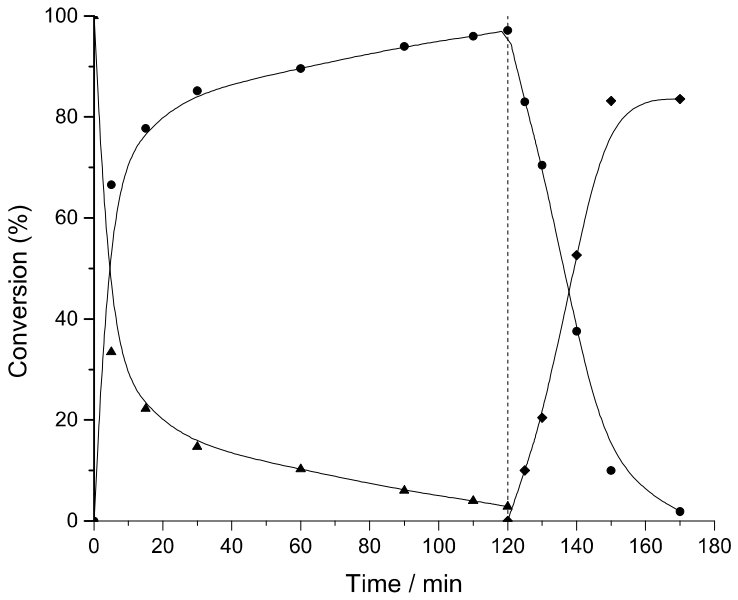

Figure S18. Kinetic of the reaction performed with MgO (30 mg) in the first step at 90°C in nitrogen atmosphere and then the basic catalyst was filtered off and Pt-TiO_2 (30mg) was added to carry out the hydrogenation step at 70°C and 9 bar H_2. *o*-Nitroacetophenone (▲), 2´-nitrochalcone (●), 2´-aminochalcone (◆). 1mmol of benzaldehyde, 1mmol of 2-nitroacetophenone in 0.5 mL of o-xylene

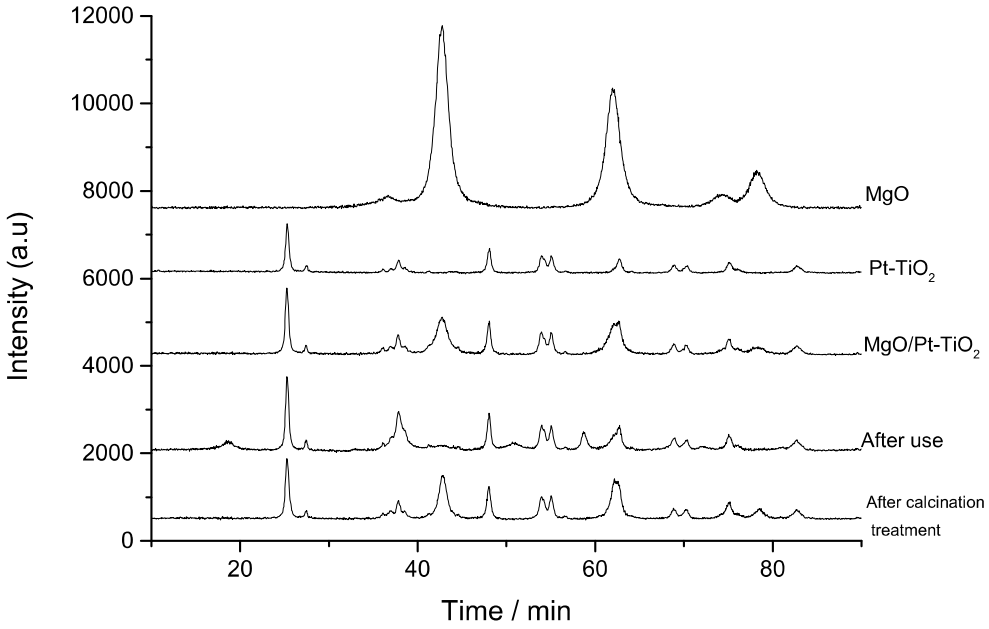

Figure S19. XRD patterns of the fresh MgO, Pt-TiO_2, the physical mixture (MgO/Pt-TiO_2) and the physical mixture after use and after calcination treatment.