-Supporting Information-

Effect of nitrogen functional groups on activated carbon surface and ruthenium catalysts on acetylene hydrochlorination

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Fig. S1 TGA curves of the fresh and used catalysts.

Fig. S2 Ru 3p3/2 XPS spectra of fresh catalysts: (a)Ru/AC, (b) Ru/AC-NO$_2$, (c) Ru/AC-NH$_2$, and (d) Ru/AC-NH.

Fig. S3 Ru 3p3/2 XPS spectra of used catalysts: (a) Ru/AC, (b) Ru/AC-NO$_2$, (c) Ru/AC-NH$_2$, and (d) Ru/AC-NH.

Table. S1 Weight loss of fresh and used catalysts under different temperature ranges.

Table S1

Weight loss of fresh and used catalysts under different temperature ranges.

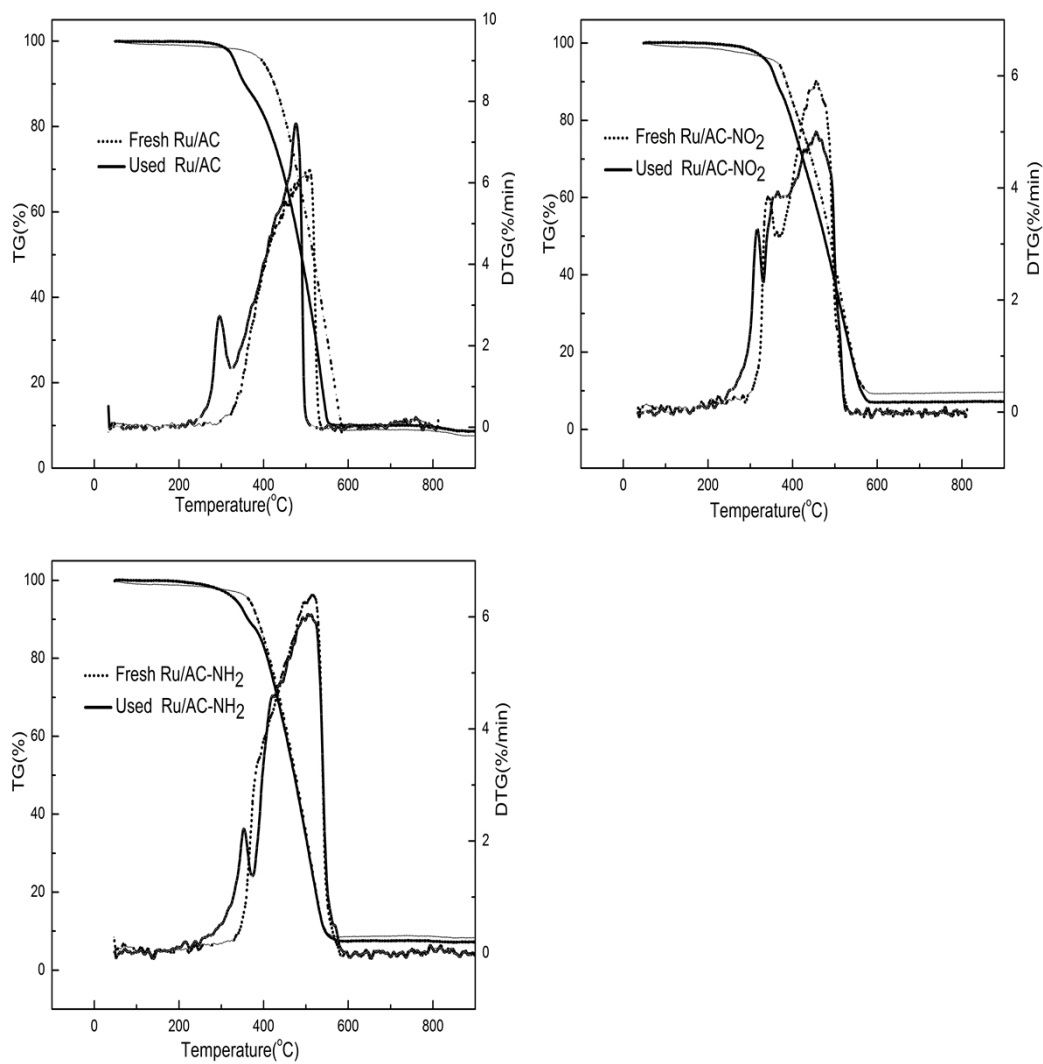| Catalysts	Temperature range (^{o}C)			
	$<$150	150-300	300-400	150-400
Fresh Ru/AC	0.8	0.7	3.7	4.4
Used Ru/AC	0.1	1.2	16.4	17.6
Fresh Ru/AC-NO$_2$	0.8	2.2	12.7	14.9
Used Ru/AC-NO$_2$	0.1	2.0	19.7	21.7
Fresh Ru/AC-NH$_2$	1.1	1.2	12.9	14.1
Used Ru/AC-NH$_2$	0.04	2.6	14.7	17.3
Fresh Ru/AC-NHN	0.4	0.8	7.3	8.1
Used Ru/AC-NHN	0.1	2.0	8.0	10.0

Fig. S1 TGA curves of the fresh and used catalysts.

Fig. S2 Ru 3p3/2 XPS spectra of fresh catalysts: (a)Ru/AC, (b) Ru/AC-NO$_2$, (c) Ru/AC-NH$_2$, and (d) Ru/AC-NHN.

Fig. S3 Ru 3p3/2 XPS spectra of used catalysts: (a) Ru/AC, (b) Ru/AC-NO$_2$, (c) Ru/AC-NH$_2$, and (d) Ru/AC-NHN.