Supplementary Materials

Table S1.

Table S1. The relative atomic ratio of O elements over different samples obtained by XPS.

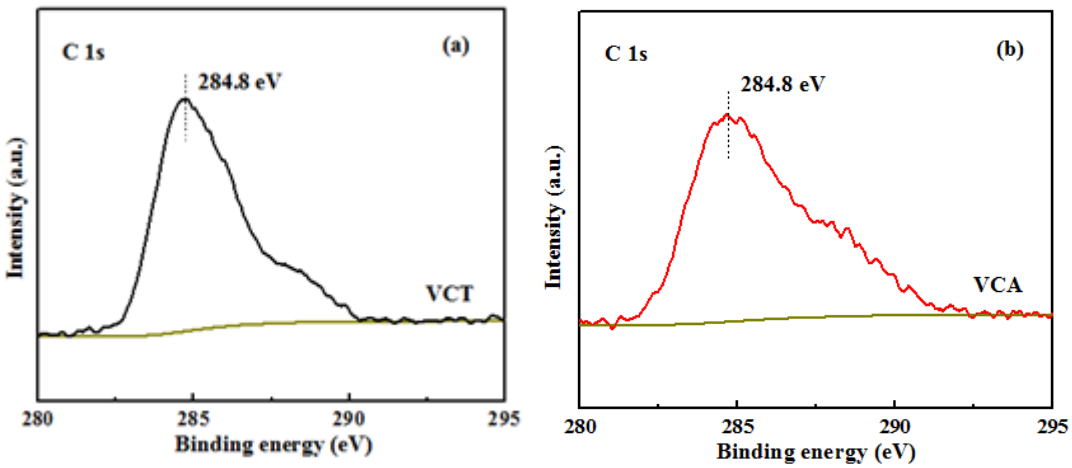
Samples	Relative atomic ratio (at.%)			
	O_α	O_β	O_γ	$O_\alpha/(O_\alpha+O_\beta+O_\gamma)$
VCT	36%	64%	0%	36%
VCA	37%	63%	0%	37%
VCZR	32%	68%	0%	32%
VCZS	5%	6%	89%	5%

Table S2.

Table S2. Quantitative analysis of NH_3-TPD over different samples.

Samples	Acid amount (a.u.)			Total acid amount (a.u.)
	S_I	S_{II}	S_{III}	$S_I+ S_{II}+ S_{III}$
VCT	820	1040	1130	2990
VCA	800	980	1050	2830
VCZR	910	/	840	1750
VCZS	1340	430	260	2030

Figure S1.



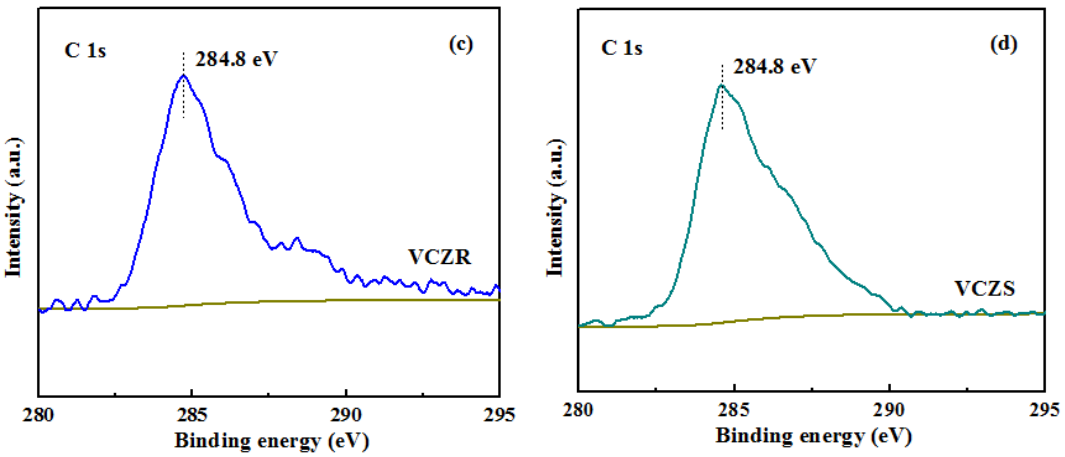


Figure S1 (a-d). The C 1s high-resolution scans spectra of different samples.

The C 1s spectra of different samples in XPS were shown as follows: In our study, the C 1s high-resolution scans spectra of different samples were listed in S1. From the pictures, the peaks of C 1s over different samples appeared at around 284.8 eV and matched with the standard value of C1s binding energy. Thus, we inferred that the experimental error has little effect on the results we obtained. In other words, the experimental error could be ignored.