

## Supporting Information

### Amines functionalized C<sub>60</sub> as solid base catalysts for Knoevenagel condensation with high activity and stability

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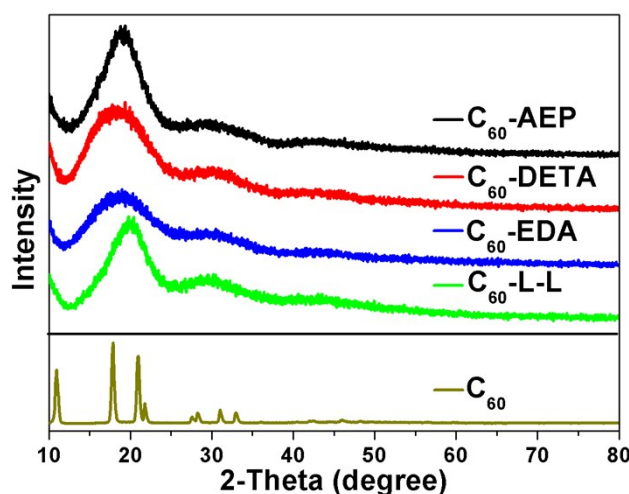


Fig. S1 XRD patterns of C<sub>60</sub> and amines functionalized C<sub>60</sub>.

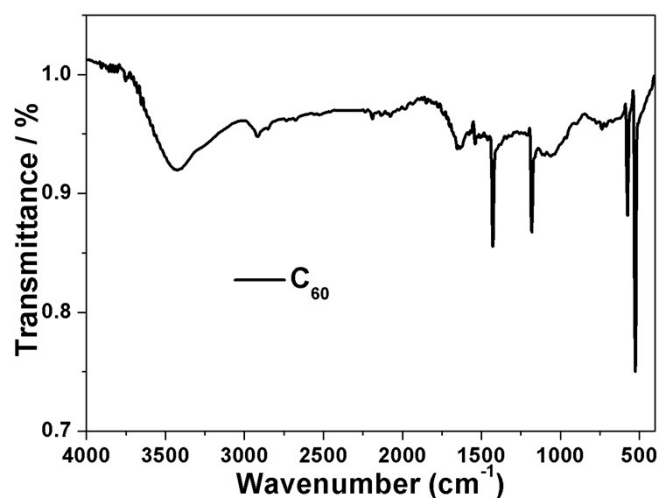


Fig. S2 FTIR spectrum of C<sub>60</sub>.

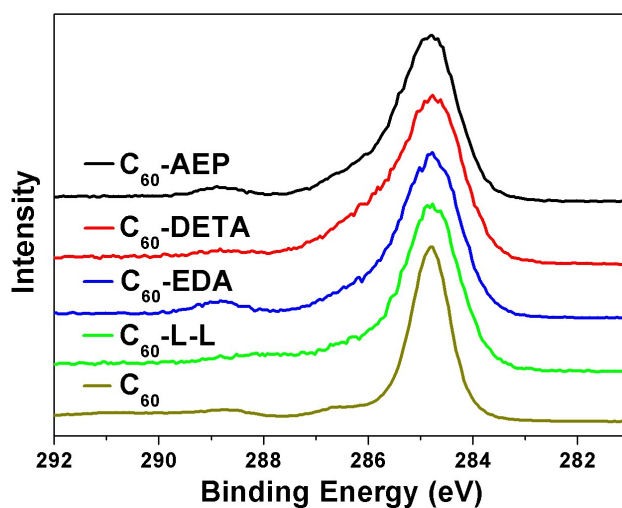


Fig. S3 XPS spectra of the C1s of amines functionalized  $C_{60}$  and  $C_{60}$ .

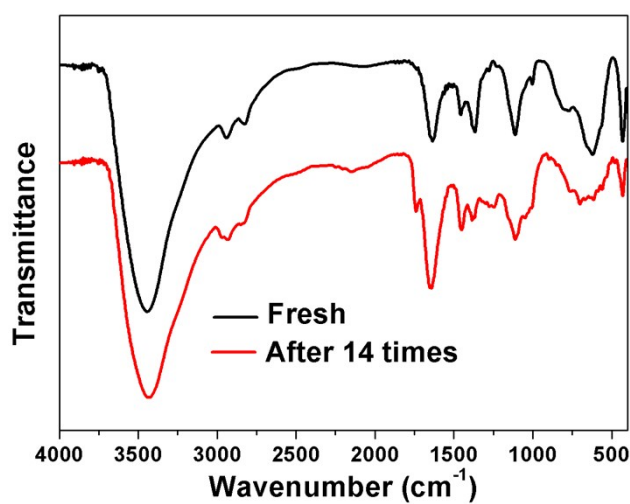


Fig. S4 FTIR spectra of the fresh  $C_{60}$ -AEP and the catalyst after 14 times used.

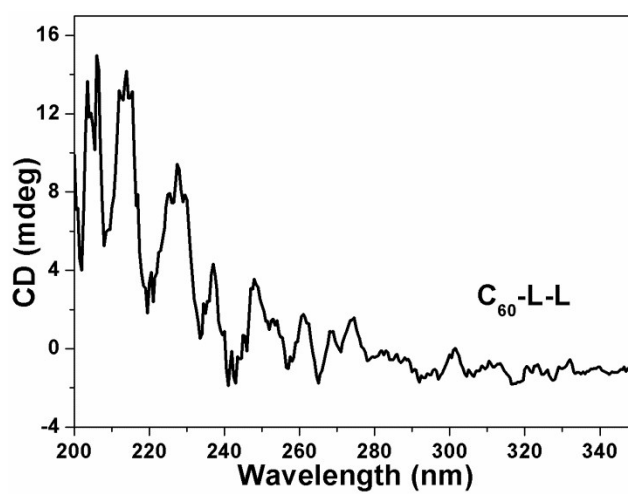
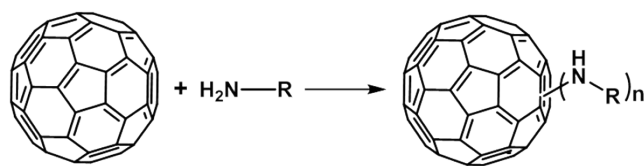


Fig. S5 Circular dichroism spectrum of  $C_{60}$ -L-L.

**Table S1** Elemental analysis of amines functionalized C<sub>60</sub>.

Entry	Sample	C (wt%)	N (wt%)	H (wt%)	Value of n
1	C <sub>60</sub> -AEP	75.2	11.5	4.1	3.6
2	C <sub>60</sub> -DETA	71.6	12.5	3.9	3.7
3	C <sub>60</sub> -EDA	75.3	12.8	3.8	5.1
4	C <sub>60</sub> -L-L	68.4	5.6	3.4	2.7

**Table S2** Carbon dioxide TPD analysis of amines functionalized C<sub>60</sub>.

Entry	Sample	Temperature at Maximum (°C)	CO <sub>2</sub> desorbed below 500 °C (cm <sup>3</sup> /g STP)
1	C <sub>60</sub> -AEP	147, 206	54
2	C <sub>60</sub> -DETA	140	41
3	C <sub>60</sub> -EDA	157	59
4	C <sub>60</sub> -L-L	167	13 <sup>a</sup>

<sup>a</sup>CO<sub>2</sub> desorbed below 250 °C (cm<sup>3</sup>/g STP)

**Table S3** Elemental analysis and catalytic results of N-aminoethylpiperazine functionalized C<sub>60</sub> and N-aminoethylpiperazine functionalized carbon nanotube.

Entry	Catalyst	N content (wt%)	Yield (%)	
			1st run	2ed run
1	AEP functionalized C <sub>60</sub> fullerene	11.5	99	99
2	AEP functionalized few-wall CNT	2.9	99	73
3	AEP functionalized multi-wall CNT	0.7	42	14