Experimental and comprehensive evaluation of vegetable oils for biomass tar absorption

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Supplementary Materials

Table S1 The data of factors on average removal efficiency of benzene, toluene and phenol

AMW on the Absorption of benzene					
	1	2	3	4	5
$x_{r,i}$	96.8	94.9	97.39	92.55	97.02
$x_{AMW,i}$	278.32	255.33	282.47	280.46	278.32
$x_{T,i}$	20	20	20	20	30
	6	7	8	9	10
$x_{r,i}$	92.45	95.27	83.85	91.71	89.45
$x_{AMW,i}$	255.33	282.47	280.46	278.32	255.33
$x_{T,i}$	30	30	30	40	40
	11	12			
$x_{r,i}$	95.08	66.6			
$x_{AMW,i}$	282.47	280.46			
$x_{T,i}$	40	40			

ACL-1 on the Absorption of benzene					
	1	2	3	4	5
$x_{r,i}$	96.8	94.9	97.39	97.02	92.45
$x_{ACL,i}$	17.77	16.87	18	17.77	16.87
$x_{T,i}$	20	20	20	30	30
	6	7	8	9	

$x_{r,i}$	95.27	91.71	89.45	95.08	
$x_{ACL,i}$	18	17.77	16.87	18	
$x_{T,i}$	30	40	40	40	

ACL-2 on the Absorption of benzene

	1	2	3	4	5
$x_{r,i}$	96.8	94.9	92.55	97.02	92.45
$x_{ACL,i}$	17.77	16.87	18	17.77	16.87
$x_{T,i}$	20	20	20	30	30
	6	7	8	9	
$x_{r,i}$	83.85	91.71	89.45	66.6	
$x_{ACL,i}$	18	17.77	16.87	18	
$x_{T,i}$	30	40	40	40	

DU on the Absorption of toluene

	1	2	3	4	5
$x_{r,i}$	93.67	89.43	93.75	88.178	93.31667
$x_{DU,i}$	105.75	59.32	89.92	181.13	105.75
$x_{T,i}$	20	20	20	20	30
	6	7	8	9	10
$x_{r,i}$	86.98333	95.18333	82.5333	89.71667	78.96667
$x_{DU,i}$	59.32	89.92	181.13	105.75	59.32
$x_{T,i}$	30	30	30	40	40
	11	12			

$x_{r,i}$	87.56667	85.01667			
$x_{DU,i}$	89.92	181.13			
$x_{T,i}$	40	40			

AMW on the Absorption of toluene

	1	2	3	4	5
$x_{r,i}$	93.67	89.43	93.75	88.178	93.31667
$x_{AMW,i}$	278.32	255.33	282.47	280.46	278.32
$x_{T,i}$	20	20	20	20	30
	6	7	8	9	10
$x_{r,i}$	86.98333	95.18333	82.5333	89.71667	78.96667
$x_{AMW,i}$	255.33	282.47	280.46	278.32	255.33
$x_{T,i}$	30	30	30	40	40
	11	12			
$x_{r,i}$	87.56667	85.01667			
$x_{AMW,i}$	282.47	280.46			
$x_{T,i}$	40	40			

ACL-1 on the Absorption of toluene

	1	2	3	4	5
$x_{r,i}$	93.67	89.43	93.75	93.31667	86.98333
$x_{ACL,i}$	17.77	16.87	18	17.77	16.87
$x_{T,i}$	20	20	20	30	30
	6	7	8	9	

$x_{r,i}$	95.18333	89.71667	78.96667	87.56667	
$x_{ACL,i}$	18	17.77	16.87	18	
$x_{T,i}$	30	40	40	40	

ACL-2 on the Absorption of benzene

	1	2	3	4	5
$x_{r,i}$	93.67	89.43	88.178	93.31667	86.98333
$x_{ACL,i}$	17.77	16.87	18	17.77	16.87
$x_{T,i}$	20	20	20	30	30
	6	7	8	9	
$x_{r,i}$	82.533	89.71667	78.96667	85.01667	
$x_{ACL,i}$	18	17.77	16.87	18	
$x_{T,i}$	30	40	40	40	

DU on the Absorption of phenol

	1	2	3	4	5
$x_{r,i}$	100	100	100	100	95.78333
$x_{DU,i}$	105.75	59.32	89.92	181.13	105.75
$x_{T,i}$	20	20	20	20	30
	6	7	8	9	10
$x_{r,i}$	96.71667	99.18333	100	89.68333	79.65
$x_{DU,i}$	59.32	89.92	181.13	105.75	59.32
$x_{T,i}$	30	30	30	40	40
	11	12			

$x_{r,i}$	85.2333	98.4			
$x_{DU,i}$	89.92	181.13			
$x_{T,i}$	40	40			

AMW on the Absorption of toluene

	1	2	3	4	5
$x_{r,i}$	100	100	100	100	95.78333
$x_{AMW,i}$	278.32	255.33	282.47	280.46	278.32
$x_{T,i}$	20	20	20	20	30
	6	7	8	9	10
$x_{r,i}$	96.71667	99.18333	100	89.68333	79.65
$x_{AMW,i}$	255.33	282.47	280.46	278.32	255.33
$x_{T,i}$	30	30	30	40	40
	11	12			
$x_{r,i}$	85.2333	98.4			
$x_{AMW,i}$	282.47	280.46			
$x_{T,i}$	40	40			

ACL-1 on the Absorption of toluene

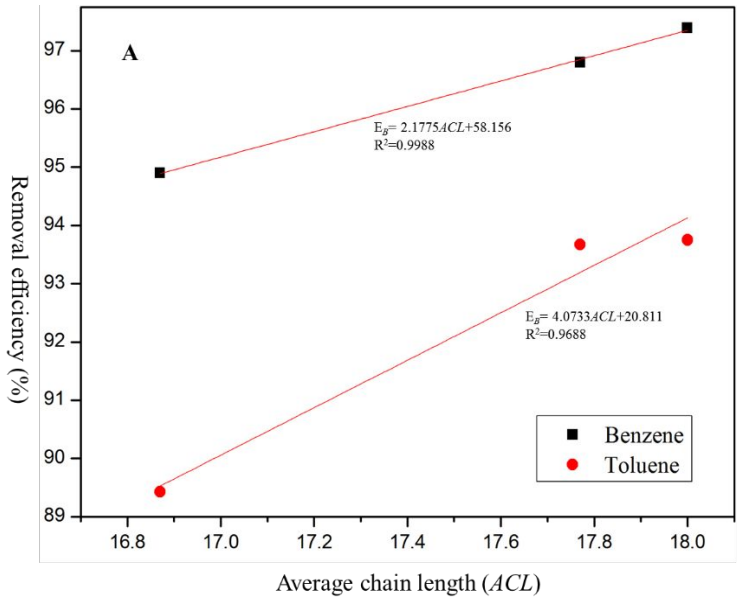
	1	2	3	4	5
$x_{r,i}$	100	100	100	95.78333	96.71667
$x_{ACL,i}$	17.77	16.87	18	17.77	16.87
$x_{T,i}$	20	20	20	30	30
	6	7	8	9	

$x_{r,i}$	99.18333	89.68333	79.65	85.2333	
$x_{ACL,i}$	18	17.77	16.87	18	
$x_{T,i}$	30	40	40	40	

ACL-2 on the Absorption of benzene

	1	2	3	4	5
$x_{r,i}$	100	100	100	95.78333	96.71667
$x_{ACL,i}$	17.77	16.87	18	17.77	16.87
$x_{T,i}$	20	20	20	30	30
	6	7	8	9	
$x_{r,i}$	100	89.68333	79.65	98.4	
$x_{ACL,i}$	18	17.77	16.87	18	
$x_{T,i}$	30	40	40	40	

Figure S1 Pictures of absorption mediums (A: canola oil; B: palm oil; C: oleic acid; D: linoleic acid)—These photos were taken by one of the authors



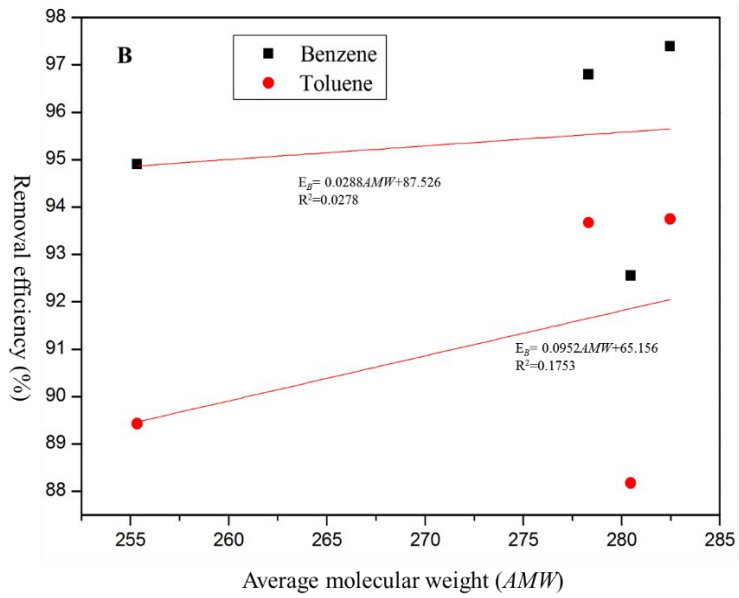


Figure S2. Effects of *ACL* (A) and *AMW* (B) on the removal of benzene and toluene (20°C)

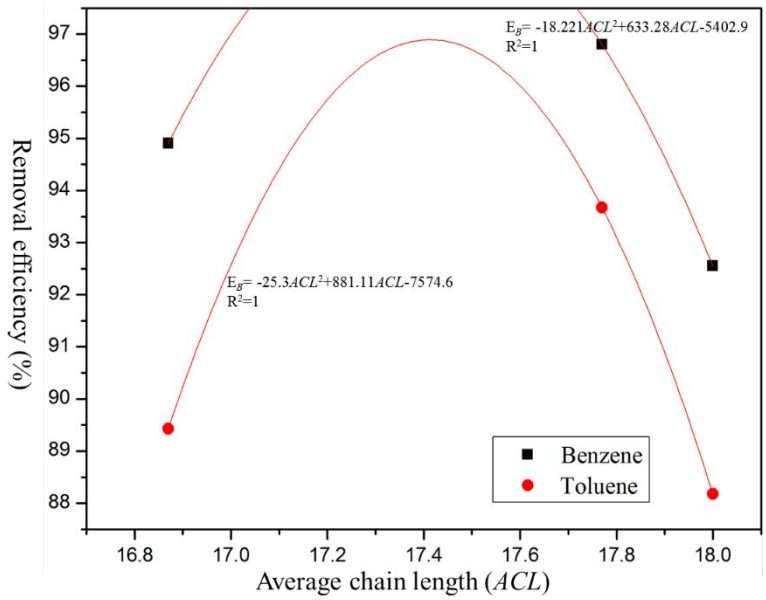


Figure S3 Effect of average chain length on the tar removal (canola oil, palm oil and linoleic acid)

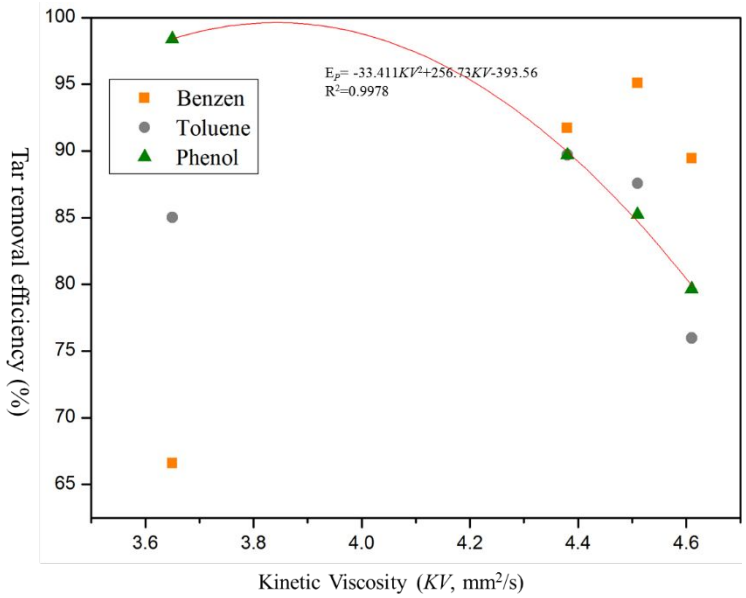


Figure S4. Effects of KV on average removal efficiency of benzene, toluene and phenol (40℃)