

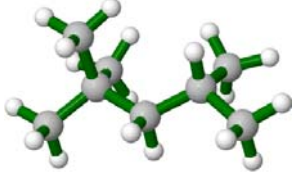
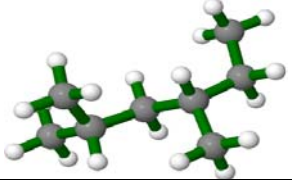
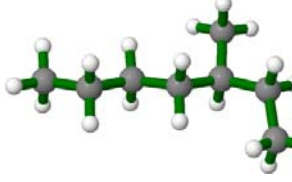
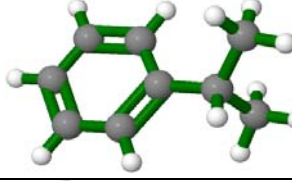
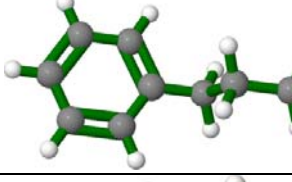
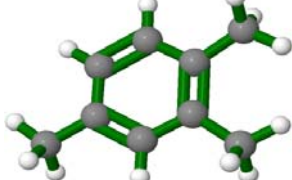
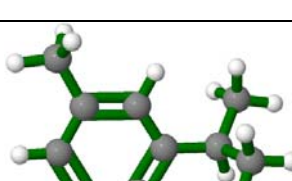
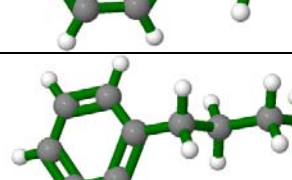
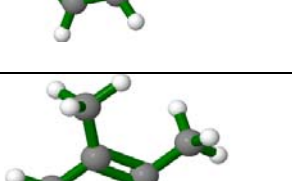
component	Structure	Shape
iso-octane ( $C_8H_{18}$ )	2,2,4-trimethylpentane	
	2,4-dimethylhexane	
	3-methylheptane	
$C_9H_{12}$	i-propylbenzene,	
	n-propylbenzene	
	1,2,4-trimethylbenzene	
$C_{10}H_{14}$	3-isopropyl-1-methylbenzene	
	n-butylbenzene	
	3-ethyl-1,2-dimethylbenzene	

Fig. 1

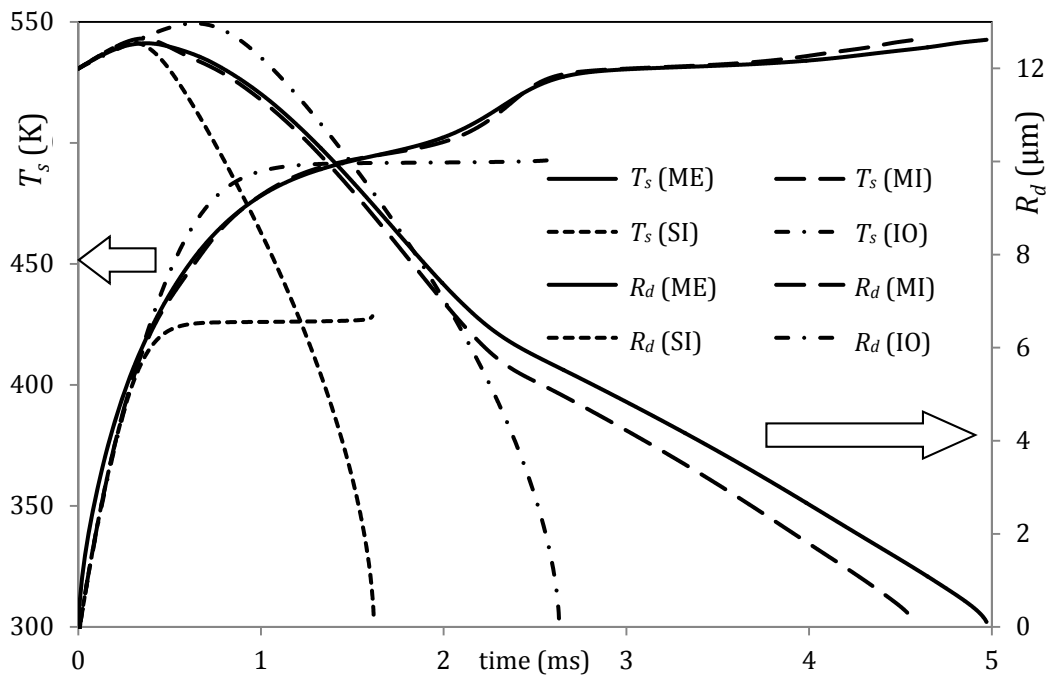


Fig. 2

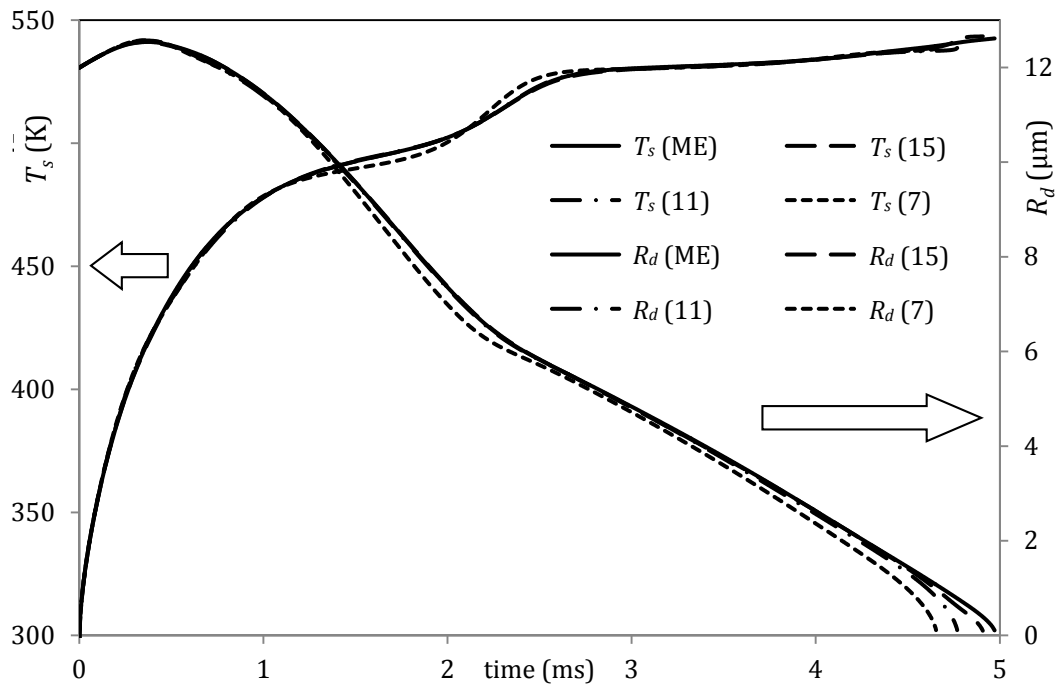


Fig. 3

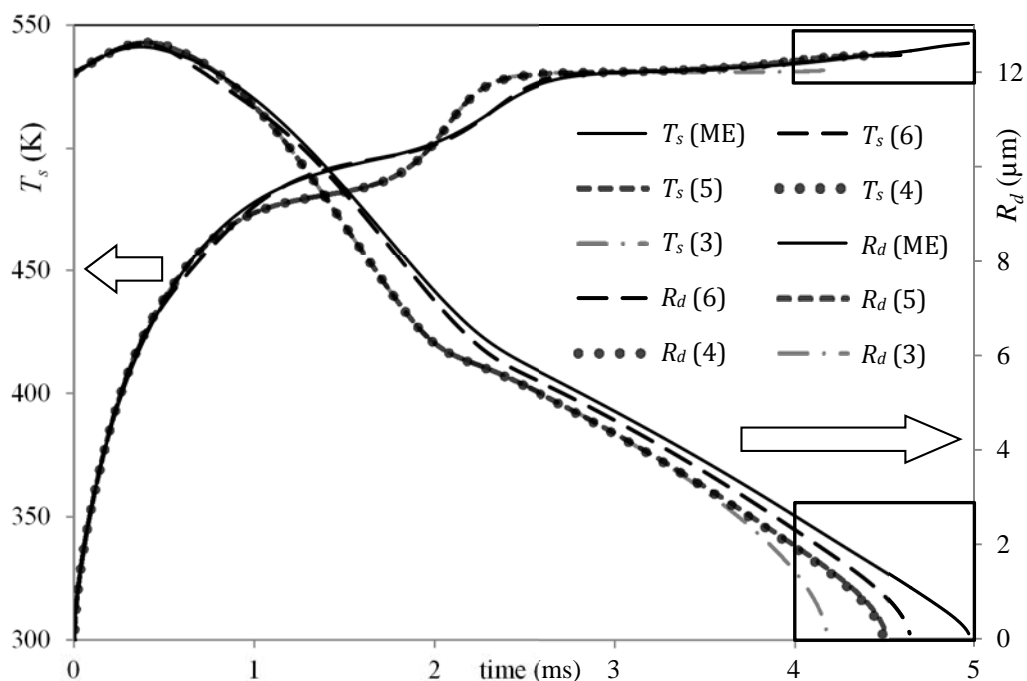


Fig. 4

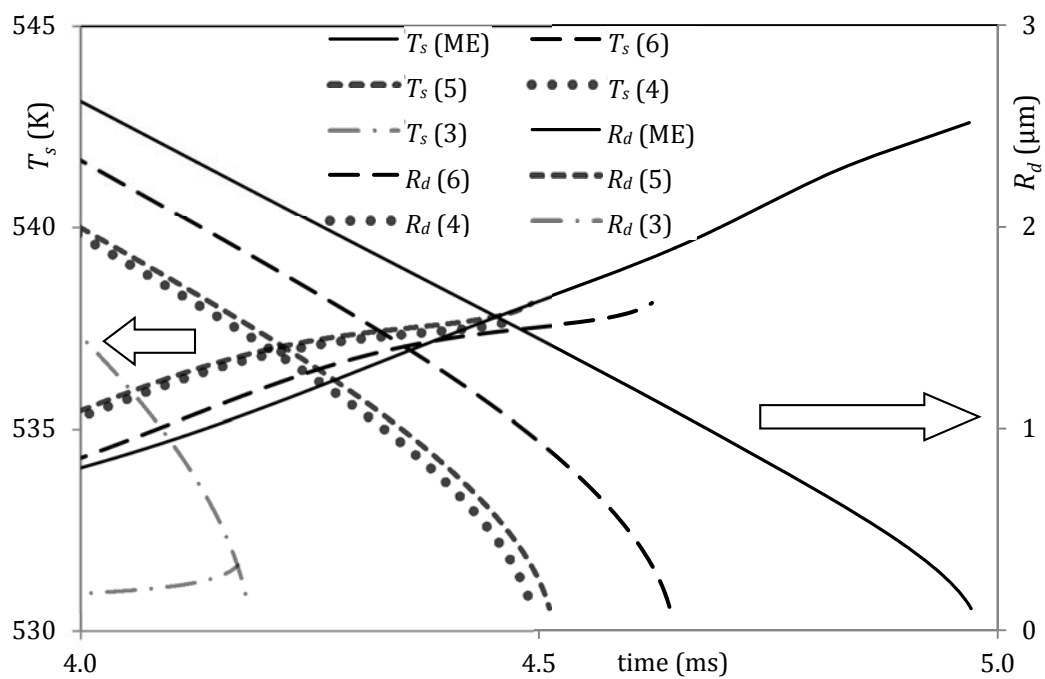
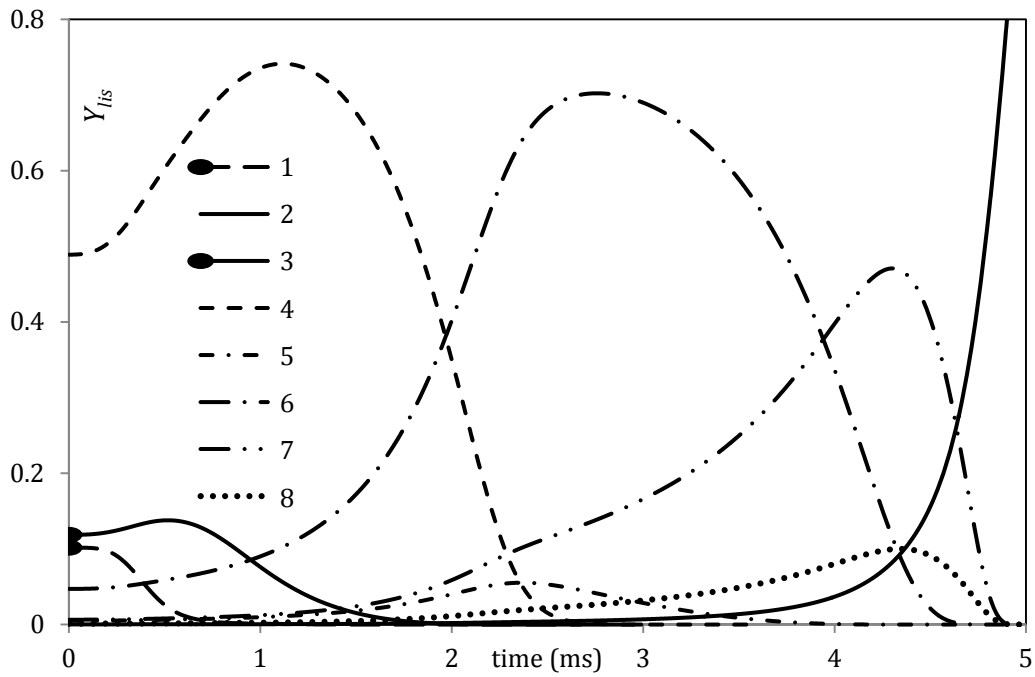


Fig. 5

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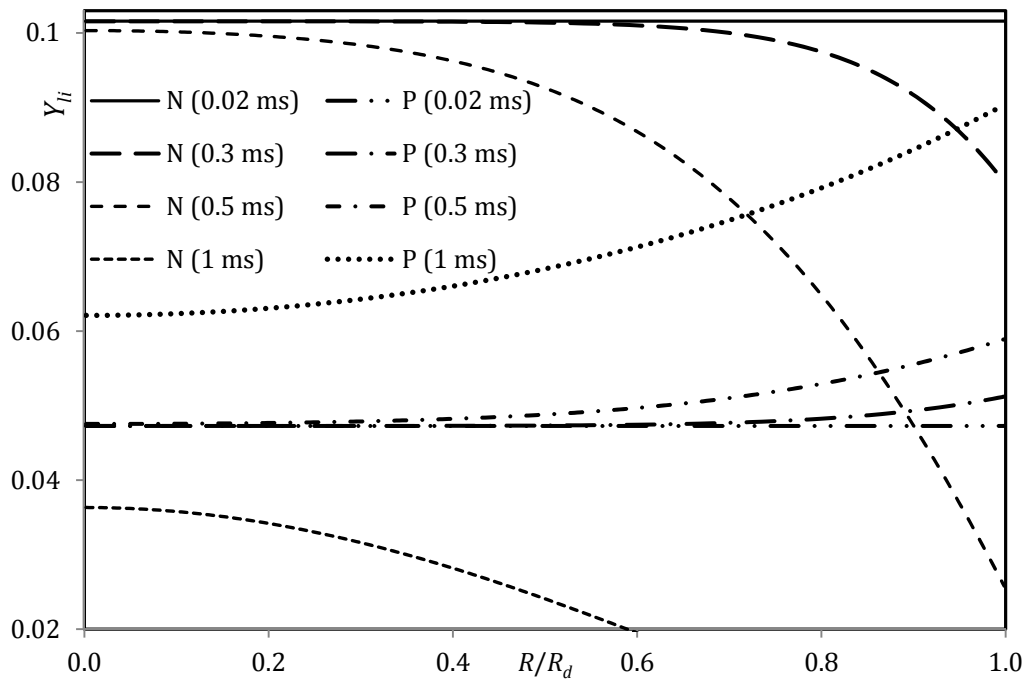


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Fig. 6

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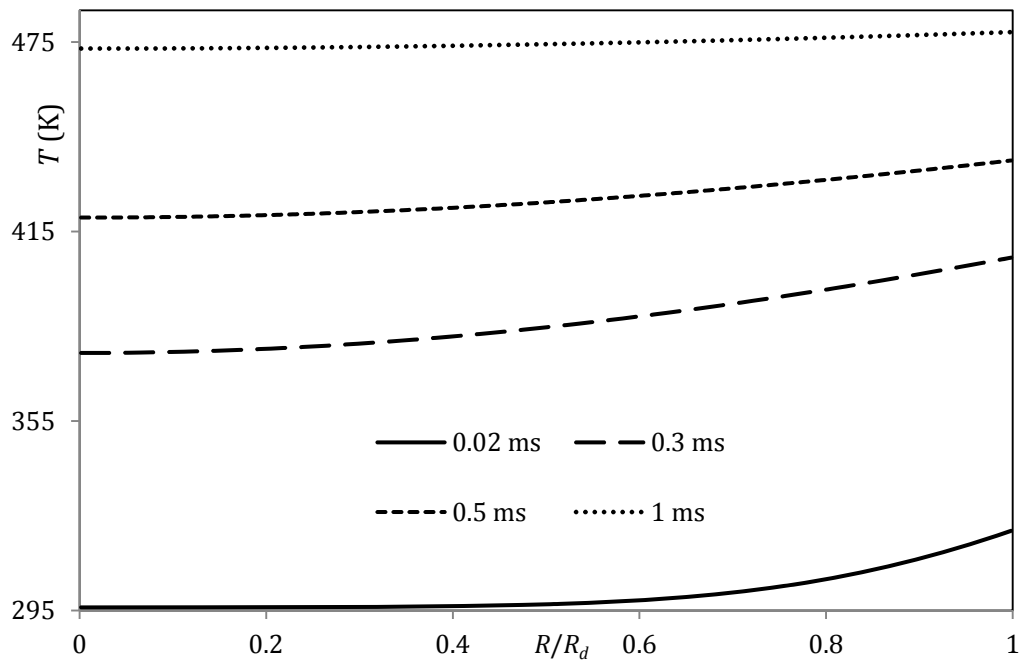
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Fig. 7

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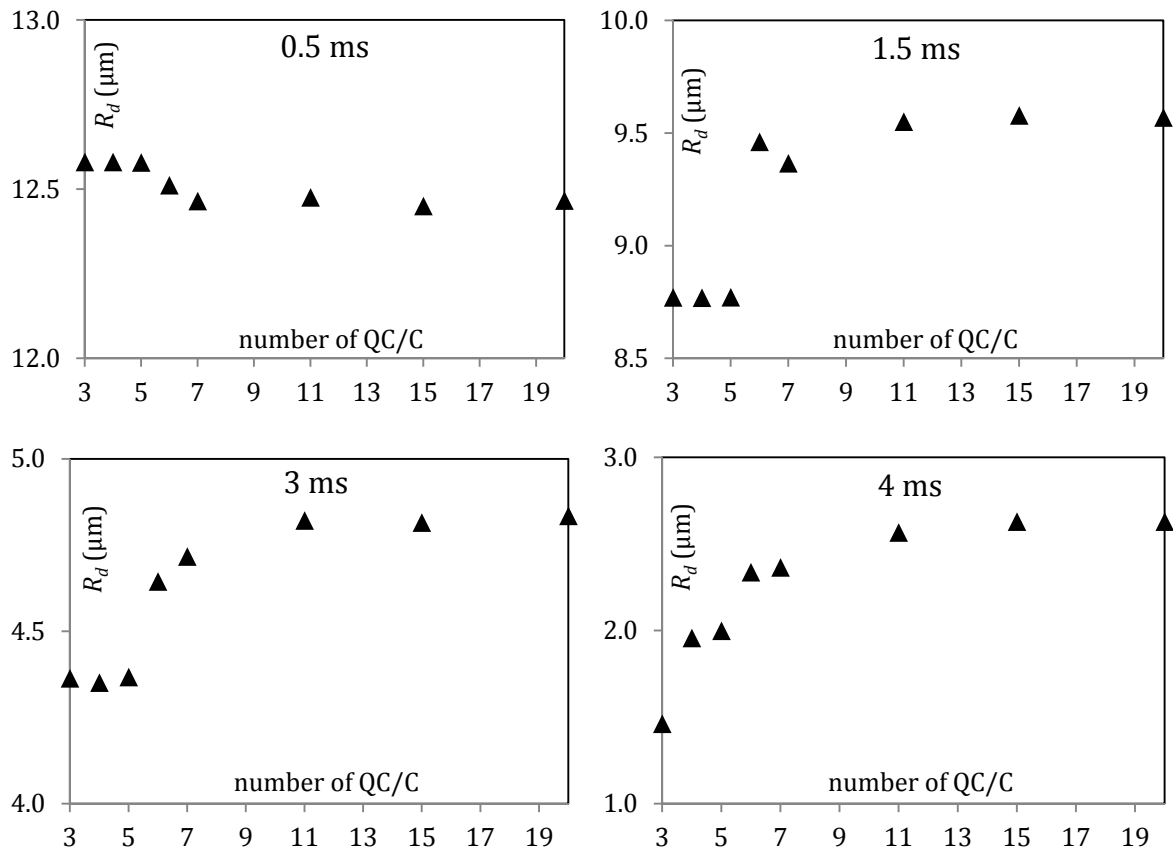


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Fig. 8

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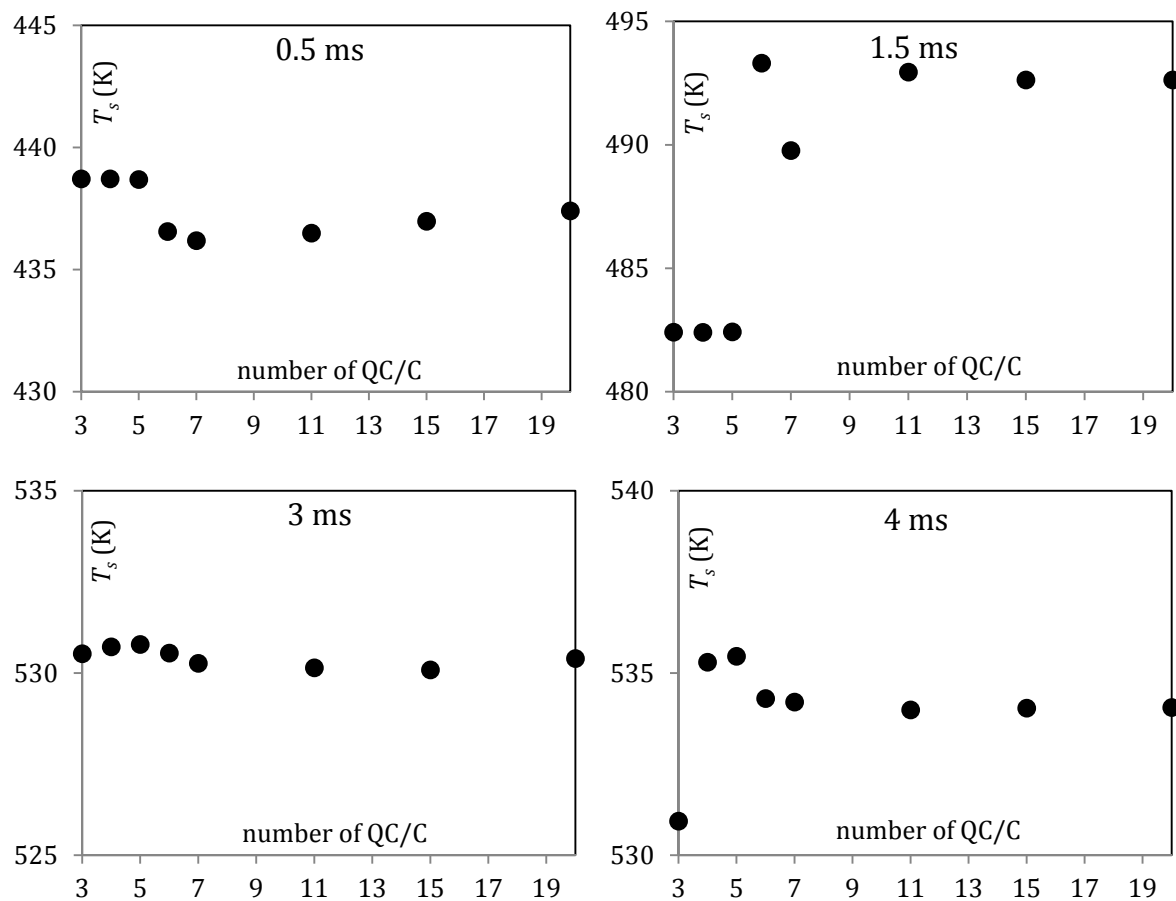
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Fig. 9

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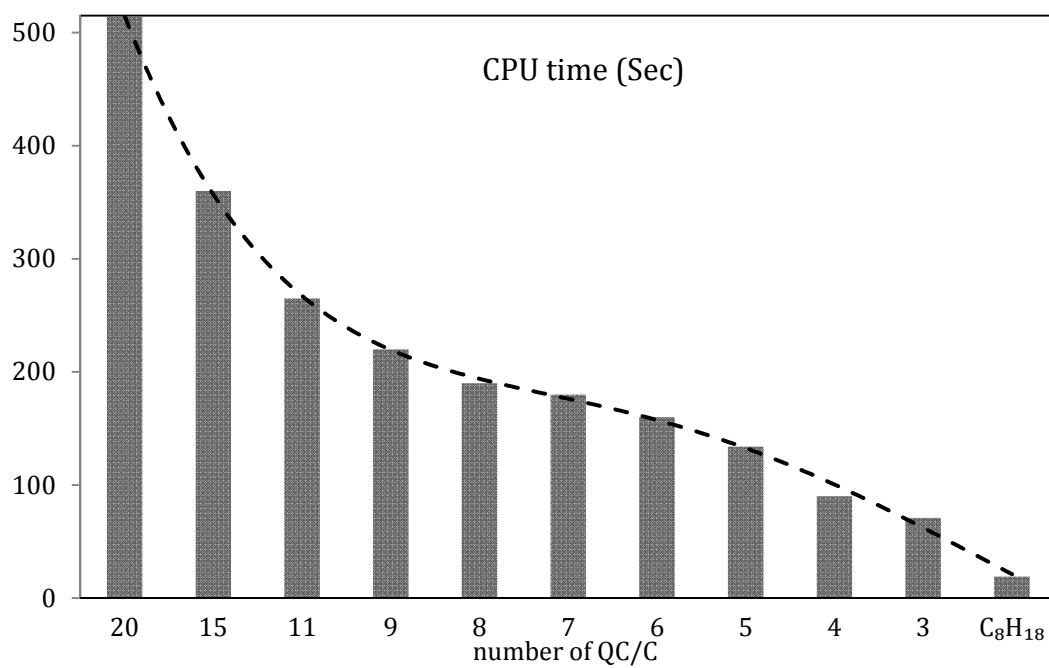
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Fig. 10



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Fig. 11

Table 1

group	components	carbon numbers	molar fractions (%)	approximations	molar fractions (%)
n-alkanes	n-butane	4	3.905436784	same	3.905436784
	n-pentane	5	13.87020578	same	13.87020578
	n-hexane	6	10.84154056	same	10.84154056
	n-decane	10	0.010008808	same	0.010008808
	n-dodecane	12	0.012010569	same	0.012010569
iso-alkanes	i-butane	4	0.092081031	same	0.092081031
	2,2-dimethylpropane	5	0.012010569	averaged	7.456561774
	i-pentane	5	7.444551205		
	2,3-dimethylbutane	6	2.021779166	averaged	2.979622067
	2-methylpentane	6	0.604531988		
	3-methylpentane	6	0.353310914		
	2,4-dimethylpentane	7	4.271759148	averaged	11.66826808
	2,2,3-trimethylbutane	7	0.044038754		
	2-methylhexane	7	0.253222836		
	2,3-dimethylpentane	7	6.883057090		
	3-methylhexane	7	0.216190247		
	2,2,4-trimethylpentane	8	23.23644807	averaged	42.17311234
	2,5-dimethylhexane	8	1.739530787		
	2,2,3-trimethylpentane	8	0.550484426		
	2,4-dimethylhexane	8	2.369084795		
	2,3,4-trimethylpentane	8	6.905076467		
	2,3,3-trimethylpentane	8	4.947353671		
	2,3-dimethylhexane	8	1.888662023		
	2-methyl-3-ethylpentane	8	0.068059893		
	2-methylheptane	8	0.060052847		
	4-methylheptane	8	0.021018496		
	3-methyl-3-ethylpentane	8	0.152133878		
	3,4-dimethylhexane	8	0.175154136		
	3-methylheptane	8	0.060052847		
	2,3,4-trimethylhexane	9	0.179157659	averaged	0.317279206
	2,2,3-trimethylhexane	9	0.02602290		
	2,5-dimethylheptane	9	0.069060773		
	2,3-dimethylheptane	9	0.043037873		
	c10 - isoparaffin-1	10	0.025022019	averaged	0.360317079
	c10 - isoparaffin-2	10	0.128112739		
	3,3,5-trimethylheptane	10	0.096084554		
	2,3,6-trimethylheptane	10	0.05204580		
	c10 - isoparaffin-1	10	0.016014092		
	2,6-dimethyloctane	10	0.029025542		
	c10 - isoparaffin-7	10	0.014012331		
	2,3,3,trimethyloctane	11	0.012010569	averaged	0.113099528
	2,5-dimethylnonane	11	0.081071343		
	3-ethylnonane	11	0.020017616		
	o-xylene	8	0.242213148	same	0.242213148

group	components	carbon num- bers	molar frac- tions (%)	approximations	molar frac- tions (%)
aromatics	i-propylbenzene	9	0.046040516	averaged	3.521098567
	n-propylbenzene	9	0.172151493		
	3-ethyl-1-methylbenzene	9	0.621546961		
	4-ethyl-1-methylbenzene	9	0.287252782		
	1,3,5-trimethylbenzene	9	0.383337337		
	2-ethyl-1-methylbenzene	9	0.462406918		
	1,2,4-trimethylbenzene	9	1.304147650		
	1,2,3-trimethylbenzene	9	0.244214909		
	sec-butylbenzene	10	0.012010569	averaged	0.440387541
	3-isopropyl-1-	10	0.033029066		
	4-isopropyl-1-	10	0.009007927		
	1,3-diethylbenzene	10	0.030026423		
	3-propyl-1-methylben-	10	0.080070462		
	4-propyl-1-methylben-	10	0.035030827		
	n-butylbenzene	10	0.016014092		
	5-ethyl-1,3-dimethylben-	10	0.059051966		
	2-propyl-1-methylben-	10	0.021018496		
	2-ethyl-1,4-dimethylben-	10	0.038033469		
	4-ethyl-1,3-dimethylben-	10	0.033029066		
	4-ethyl-1,2-dimethylben-	10	0.059051966		
	3-ethyl-1,2-dimethylben-	10	0.015013212		
	4-isopropyl-1-ethylben-	11	0.023020258	averaged	0.055048443
	1-butyl-1-methylbenzene	11	0.032028185		
indanes/ naphthalenes	5-methylindan	10	0.010008808	indane (C <sub>9</sub> H <sub>10</sub> )	0.104091601
	2-methylindan	10	0.009007927		
	naphthalene	10	0.019016735		
	indane (indenes)	9	0.066058131		
cycloalkanes	3c-ethylmethylcyclopent-	8	1.345183762	3c-ethylmethylcyclopentane (C <sub>8</sub> H <sub>16</sub> )	1.491312355
	1,1,methylethylcyclopent-	8	0.022019377		
	c8 - mononaph - 3	8	0.060052847		
	methylcycloheptane	8	0.046040516		
	1-methyl-2-propylcyclo-	10	0.018015854		
olefins	1-pentene	5	0.046040516	1-nonene (C <sub>9</sub> H <sub>18</sub> )	0.346304748
	c-pentene-2	5	0.016014092		
	1-hexene	6	0.007006165		
	1-nonene	9	0.195171751		
	(z) 2-decene	10	0.056049323		
	3-ethyl-2-methyl-2-hep-	10	0.013011450		
	c-10-isoolefin-9	10	0.013011450		

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Table 2

<i>m</i>	group	molar frac- tions (%)	number of compo-
1	n-alkanes	28.50	5
2	iso-alkanes	65.18	8
3	aromatics	4.40	4
4	indanes/naphthalenes	0.10	1
5	cycloalkanes	0.33	1
6	olefins	1.49	1

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Table 3

component	<i>n</i>	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>
n-butane	4	-4.6402	4.850E2	1.340E-2	-1.970E-5
n-pentane	5	-7.1711	7.470E2	2.170E-2	-2.720E-5
n-hexane	6	-5.0715	6.550E2	1.230E-2	-1.50E-5
n-decane	10	-6.0716	1.020E3	1.220E-2	-1.190E-5
n-dodecane	12	-7.0687	1.263E3	1.3735E-2	-1.2215E-5

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Table 4

group	carbon number	relative density ( $\rho$ )
n-alkanes	4	0.592
	5	0.631
	6	0.662
	10	0.737
	12	0.753
iso-alkanes	4	0.566
	5	0.620
	6	0.661
	7	0.691
	8	0.713
	9	0.729
	10	0.739
	11	0.743
aromatics	8	0.884
	9	0.875
	10	0.872
	11	0.862
indanes/naphthalenes	9	0.969
cycloalkanes	8	0.771
olefins	9	0.733

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Table 5

group	$A^*$	$\alpha$	$\beta$	$\gamma$
n-/iso- alkanes	0.0035	1.2	0.5	0.167
aromatics	0.0346	1.2	1	0.167
indanes/naphthalenes	0.035	1.2	0.5	0.167
cycloalkanes	0.031	1.2	1	0.167
olefins	0.0361	1.2	1	0.167

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Table 6

component	$n$	$A$	$B$	$T$	$T_c$
n-butane	4	33.0198	0.377	272.65	425.13
n-pentane	5	39.8543	0.398	309.22	469.65
n-hexane	6	45.610	0.401	341.88	507.43
n-decane	10	71.4282	0.451	447.30	618.45
n-dodecane	12	77.1658	0.407	489.47	658.20

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Table 7

component	$n$	$A$	$B$	$C$	$D$
i-butane	4	-1.80770	258.930	0.003021	-8.64410E-06
C <sub>5</sub> H <sub>12</sub>	5	-5.80889	706.6875	0.014813	-1.85303E-05
C <sub>6</sub> H <sub>14</sub>	6	-10.2364	1387.157	0.024213	-2.40762E-05
C <sub>7</sub> H <sub>16</sub>	7	-4.84309	641.4304	0.011545	-1.37435E-05
C <sub>8</sub> H <sub>18</sub>	8	-10.2217	1423.586	0.024242	-2.33636E-05
C <sub>9</sub> H <sub>20</sub>	9	-4.25773	652.8668	0.008355	-8.98181E-06
C <sub>10</sub> H <sub>22</sub>	10	-4.8378	782.6433	0.009299	-9.37893E-06
C <sub>11</sub> H <sub>24</sub>	11	-4.23052	709.6763	0.007402	-7.41622E-06

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Table 8

component	$n$	$A$	$B$
i-butane	4	31.95380	0.392
C <sub>5</sub> H <sub>12</sub>	5	37.68615	0.394981
C <sub>6</sub> H <sub>14</sub>	6	42.32119	0.389105
C <sub>7</sub> H <sub>16</sub>	7	46.95571	0.388222
C <sub>8</sub> H <sub>18</sub>	8	49.32456	0.382229
C <sub>9</sub> H <sub>20</sub>	9	56.10624	0.38
C <sub>10</sub> H <sub>22</sub>	10	59.25229	0.38
C <sub>11</sub> H <sub>24</sub>	11	65.11180	0.38

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Table 9

component	$n$	$A$	$B$	$C$
o-xylene	8	0.28760	0.265130	0.27410
C <sub>9</sub> H <sub>12</sub>	9	0.269256	0.249881	0.274542
C <sub>10</sub> H <sub>14</sub>	10	0.276930	0.258413	0.288381
C <sub>11</sub> H <sub>16</sub>	11	0.275810	0.262610	0.285710

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Table 10

component	<i>n</i>	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>
o-xylene	8	-7.8805	1250.0	0.016116	-1.39930E-05
C <sub>9</sub> H <sub>12</sub>	9	-5.30135209	897.6554	0.009761	-8.86622E-06
C <sub>10</sub> H <sub>14</sub>	10	-4.346850	781.4415	0.007281	-6.73705E-06
C <sub>11</sub> H <sub>16</sub>	11	-4.6410	853.230	0.007850	-7.10120E-06

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Table 11

Component	<i>n</i>	<i>A</i>	<i>B</i>
o-xylene	8	55.6060	0.3750
C <sub>9</sub> H <sub>12</sub>	9	59.97485694	0.38526
C <sub>10</sub> H <sub>14</sub>	10	63.32651773	0.379614
C <sub>11</sub> H <sub>16</sub>	11	65.20160	0.380

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Table 12

group	<i>A</i>	<i>B</i>	<i>C</i>
indanes/naphthalenes	310.20	0.26114	0.30223
cycloalkanes	264.97	0.27385	0.28571
olefins	239.10	0.25815	0.28571

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Table 13

group	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>
indanes/naphthalenes	-7.3304	1330.6	0.0126170	-8.6008E-6
cycloalkanes	-4.2467	654.41	0.0085394	-9.3374E-6
olefins	-6.5557	993.50	0.0142320	-1.4097E-5

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Table 14

group	<i>A</i>	<i>B</i>
indanes/naphthalenes	62.1067	0.42
cycloalkanes	50.9505	0.38
olefins	61.7073	0.38

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