

## Adsorption isotherms of enantiomers on a chiral open-framework copper borophosphate $\text{LiCu}_2[\text{BP}_2\text{O}_8(\text{OH})_2]$

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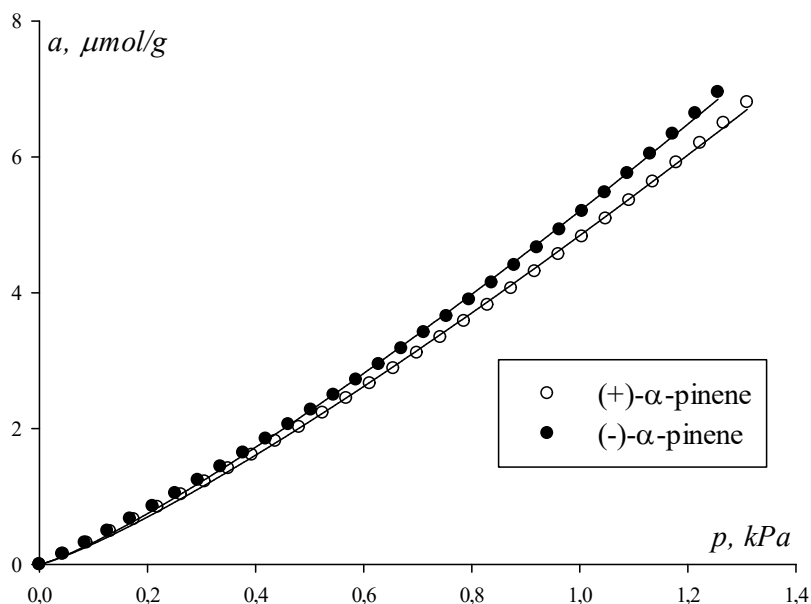


Figure 1S. Isotherm of  $\alpha$ -pinene enantiomers vapours adsorption at 70°C

Table 1S. P-values for pairs of points of  $\alpha$ -pinenes vapours adsorption at 70 °C ( $\alpha = 0.05$ )

p, kPa	p	p, kPa	p	p, kPa	p	p, kPa	p	p, kPa	p
<b>0.04</b>	0.9065	<b>0.29</b>	0.1591	<b>0.56</b>	0.1301	<b>0.83</b>	0.0014	<b>1.09</b>	0.0025
<b>0.08</b>	0.5661	<b>0.34</b>	0.1428	<b>0.59</b>	0.1228	<b>0.88</b>	0.0015	<b>1.13</b>	0.0027
<b>0.12</b>	0.3507	<b>0.38</b>	0.1254	<b>0.66</b>	0.0008	<b>0.92</b>	0.0017	<b>1.18</b>	0.0029
<b>0.17</b>	0.2189	<b>0.43</b>	0.1391	<b>0.71</b>	0.0010	<b>0.96</b>	0.0020	<b>1.21</b>	0.0031
<b>0.21</b>	0.1814	<b>0.47</b>	0.1366	<b>0.75</b>	0.0011	<b>1.00</b>	0.0021	<b>1.26</b>	0.0033
<b>0.26</b>	0.1698	<b>0.51</b>	0.1200	<b>0.79</b>	0.0012	<b>1.05</b>	0.0023		

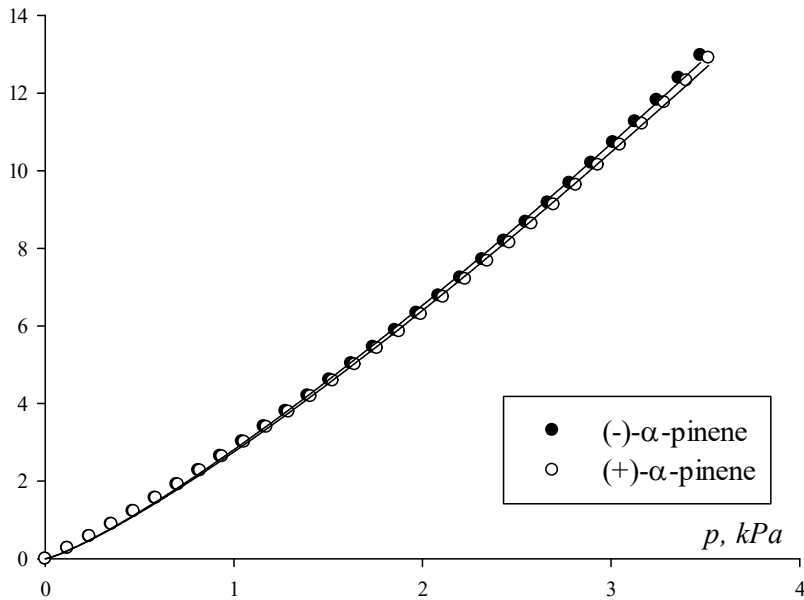


Figure 2S. Isotherm of  $\alpha$ -pinene enantiomers vapours adsorption at 90°C

Table 2S. P-values for pairs of points of  $\alpha$ -pinenes vapours adsorption at 90 °C ( $\alpha = 0.05$ )

<b>p, kPa</b>	<b>p</b>	<b>p, kPa</b>	<b>p</b>	<b>p, kPa</b>	<b>p</b>	<b>p, kPa</b>	<b>p</b>	<b>p, kPa</b>	<b>p</b>
<b>0.12</b>	0.3171	<b>0.82</b>	0.0932	<b>1.51</b>	0.0324	<b>2.21</b>	0.0248	<b>2.91</b>	0.0290
<b>0.23</b>	0.8442	<b>0.93</b>	0.0630	<b>1.63</b>	0.0158	<b>2.23</b>	0.0302	<b>3.03</b>	0.0195
<b>0.35</b>	0.1565	<b>1.05</b>	0.1309	<b>1.75</b>	0.0235	<b>2.45</b>	0.0242	<b>3.15</b>	0.0253
<b>0.47</b>	0.3873	<b>1.17</b>	0.0516	<b>1.86</b>	0.0288	<b>2.56</b>	0.0232	<b>3.26</b>	0.0176
<b>0.59</b>	0.1526	<b>1.28</b>	0.0699	<b>1.98</b>	0.0424	<b>2.68</b>	0.0209	<b>3.38</b>	0.0184
<b>0.70</b>	0.1011	<b>1.40</b>	0.0220	<b>2.10</b>	0.0218	<b>2.80</b>	0.0195	<b>3.50</b>	0.0201

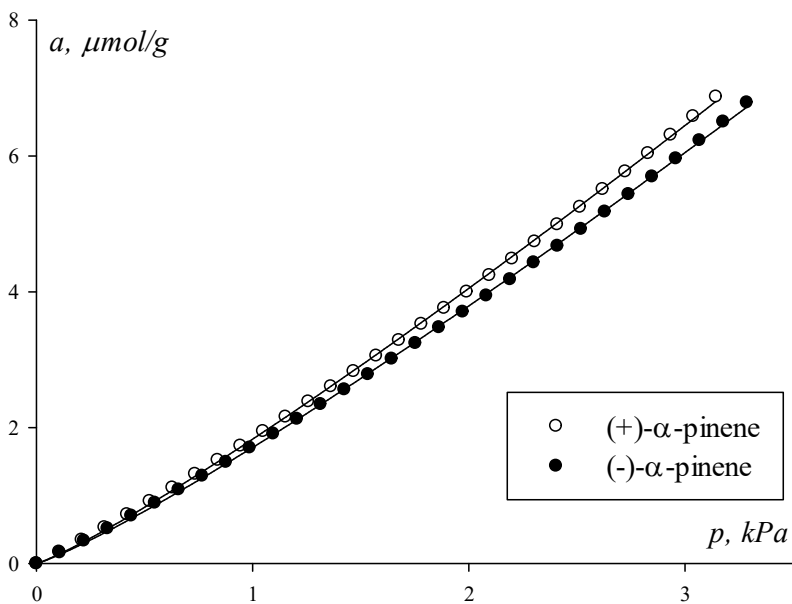


Figure 3S. Isotherm of  $\alpha$ -pinene enantiomers vapours adsorption at 100°C

Table 3S. P-values for pairs of points of  $\alpha$ -pinenes vapours adsorption at 100 °C ( $\alpha = 0.05$ )

<b>p, kPa</b>	<b>p</b>	<b>p, kPa</b>	<b>p</b>	<b>p, kPa</b>	<b>p</b>
<b>1.75</b>	0.1951	<b>2.39</b>	0.1651	<b>3.04</b>	0.1543
<b>1.86</b>	0.1890	<b>2.50</b>	0.1616	<b>3.14</b>	0.1507
<b>1.96</b>	0.1860	<b>2.61</b>	0.1582		
<b>2.07</b>	0.1829	<b>2.71</b>	0.1574		
<b>2.18</b>	0.1894	<b>2.82</b>	0.1544		
<b>2.29</b>	0.1674	<b>2.93</b>	0.1543		

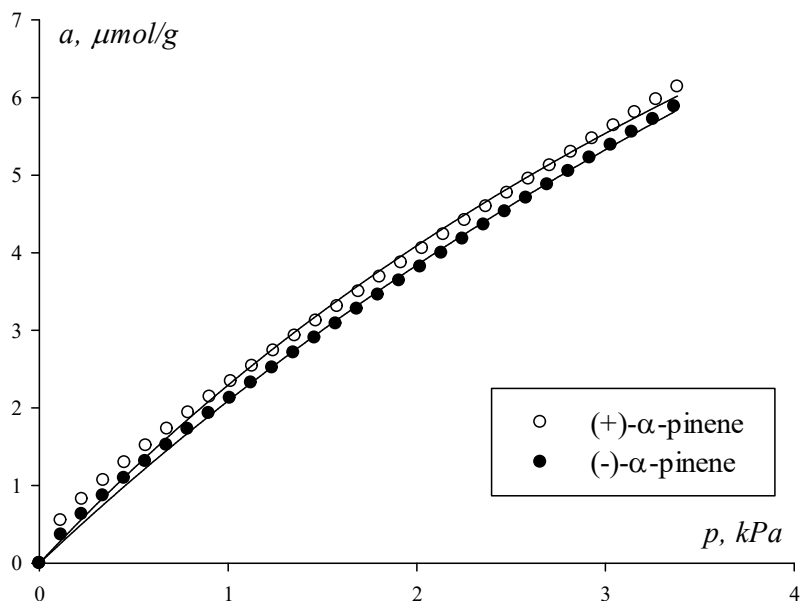


Figure 4S. Isotherm of  $\alpha$ -pinene enantiomers vapours adsorption at 110°C

Table 4S. P-values for pairs of points of  $\alpha$ -pinenes vapours adsorption at 110 °C ( $\alpha = 0.05$ )

<b>p, kPa</b>	<b>p</b>	<b>p, kPa</b>	<b>p</b>	<b>p, kPa</b>	<b>P</b>	<b>p, kPa</b>	<b>p</b>	<b>p, kPa</b>	<b>p</b>
<b>0.11</b>	0.1798	<b>0.78</b>	0.1675	<b>1.46</b>	0.1710	<b>2.16</b>	0.3177	<b>2.83</b>	0.3147
<b>0.23</b>	0.1784	<b>0.90</b>	0.1713	<b>1.57</b>	0.1627	<b>2.27</b>	0.3261	<b>2.94</b>	0.3051
<b>0.34</b>	0.1769	<b>1.01</b>	0.1702	<b>1.70</b>	0.3522	<b>2.38</b>	0.3330	<b>3.05</b>	0.3015
<b>0.45</b>	0.1770	<b>1.12</b>	0.1717	<b>1.81</b>	0.3318	<b>2.50</b>	0.3232	<b>3.17</b>	0.2959
<b>0.56</b>	0.1715	<b>1.24</b>	0.1619	<b>1.93</b>	0.3321	<b>2.60</b>	0.3135	<b>3.30</b>	0.2952
<b>0.68</b>	0.1715	<b>1.35</b>	0.1673	<b>2.04</b>	0.3173	<b>2.72</b>	0.3094		

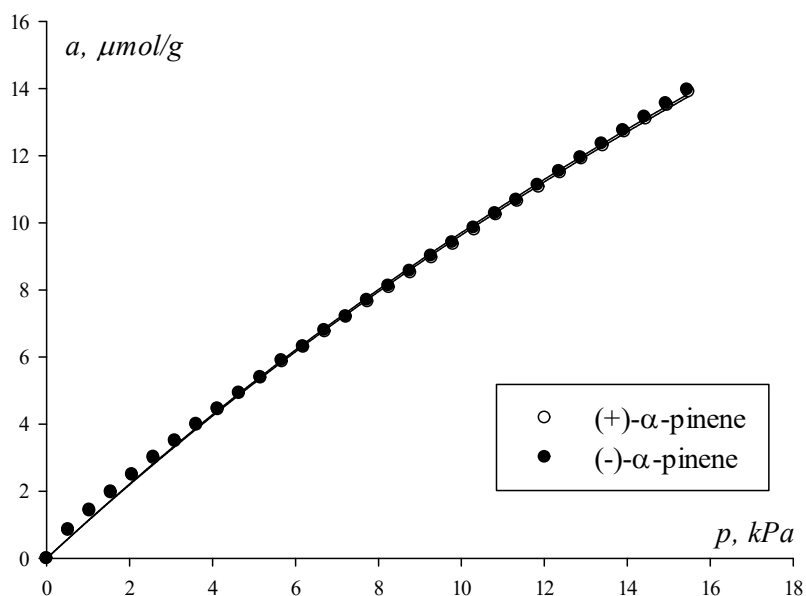


Figure 5S. Isotherm of  $\alpha$ -pinene enantiomers vapours adsorption at 140°C

Table 5S. P-values for pairs of points of  $\alpha$ -pinenes vapours adsorption at 140 °C ( $\alpha = 0.05$ )

<b>p, kPa</b>	<b>p</b>	<b>p, kPa</b>	<b>p</b>	<b>p, kPa</b>	<b>p</b>	<b>p, kPa</b>	<b>p</b>	<b>p, kPa</b>	<b>p</b>
<b>0.52</b>	0.4130	<b>3.60</b>	0.4388	<b>6.70</b>	0.4142	<b>9.80</b>	0.4314	<b>12.88</b>	0.4841
<b>1.03</b>	0.3551	<b>4.12</b>	0.4027	<b>7.22</b>	0.5420	<b>10.31</b>	0.2452	<b>13.40</b>	0.2982
<b>1.55</b>	0.4086	<b>4.64</b>	0.6221	<b>7.73</b>	0.2567	<b>10.82</b>	0.5168	<b>13.91</b>	0.4727
<b>2.06</b>	0.4072	<b>5.15</b>	0.6053	<b>8.25</b>	0.2504	<b>11.34</b>	0.4788	<b>14.43</b>	0.4293
<b>2.58</b>	0.4026	<b>5.70</b>	0.3142	<b>8.76</b>	0.2460	<b>11.85</b>	0.2622	<b>14.95</b>	0.3624
<b>3.09</b>	0.5129	<b>6.18</b>	0.5719	<b>9.28</b>	0.2437	<b>12.37</b>	0.4903	<b>15.46</b>	0.4070

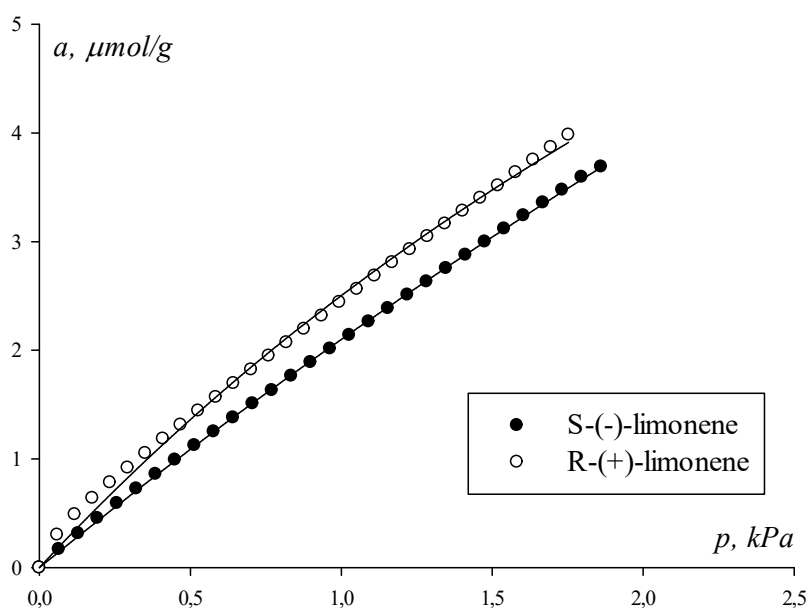


Figure 6S. Isotherm of limonene enantiomers vapours adsorption at 120°C

Table 6S. P-values for pairs of points of limonenes vapours adsorption at 120 °C ( $\alpha = 0.05$ )

<b>p, kPa</b>	<b>p</b>	<b>p, kPa</b>	<b>p</b>	<b>p, kPa</b>	<b>p</b>	<b>p, kPa</b>	<b>p</b>
<b>0.06</b>	0.0165	<b>0.52</b>	0.0021	<b>1.10</b>	0.0107	<b>1.68</b>	0.0058
<b>0.24</b>	0.0268	<b>0.58</b>	0.0026	<b>1.22</b>	0.0110		
<b>0.30</b>	0.0287	<b>0.79</b>	0.0007	<b>1.34</b>	0.0115		
<b>0.39</b>	0.0015	<b>0.85</b>	0.0010	<b>1.49</b>	0.0054		
<b>0.45</b>	0.0017	<b>0.97</b>	0.0010	<b>1.62</b>	0.0056		

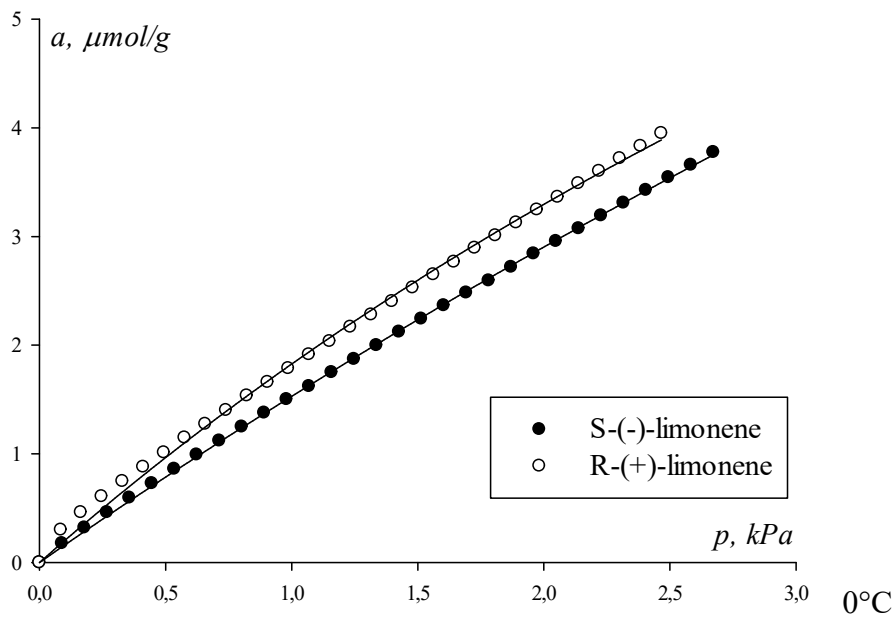


Figure 7S. Isotherm of limonene enantiomers vapours adsorption at 140 °C ( $\alpha = 0.05$ )

Table 7S. P-values for pairs of points of limonenes vapours adsorption at 140 °C ( $\alpha = 0.05$ )

<b>p, kPa</b>	<b>p</b>	<b>p, kPa</b>	<b>p</b>	<b>p, kPa</b>	<b>p</b>	<b>p, kPa</b>	<b>p</b>
<b>0.09</b>	0.0038	<b>0.54</b>	0.0002	<b>1.07</b>	0.0182	<b>1.80</b>	0.0057
<b>0.17</b>	0.0039	<b>0.62</b>	0.0005	<b>1.16</b>	0.0229	<b>1.97</b>	0.0069
<b>0.26</b>	0.0070	<b>0.71</b>	0.0005	<b>1.24</b>	0.0166	<b>2.14</b>	0.0067
<b>0.34</b>	0.0077	<b>0.89</b>	0.0010	<b>1.35</b>	0.0026	<b>2.35</b>	0.0333
<b>0.45</b>	0.0005	<b>0.97</b>	0.0013	<b>1.58</b>	0.0149		

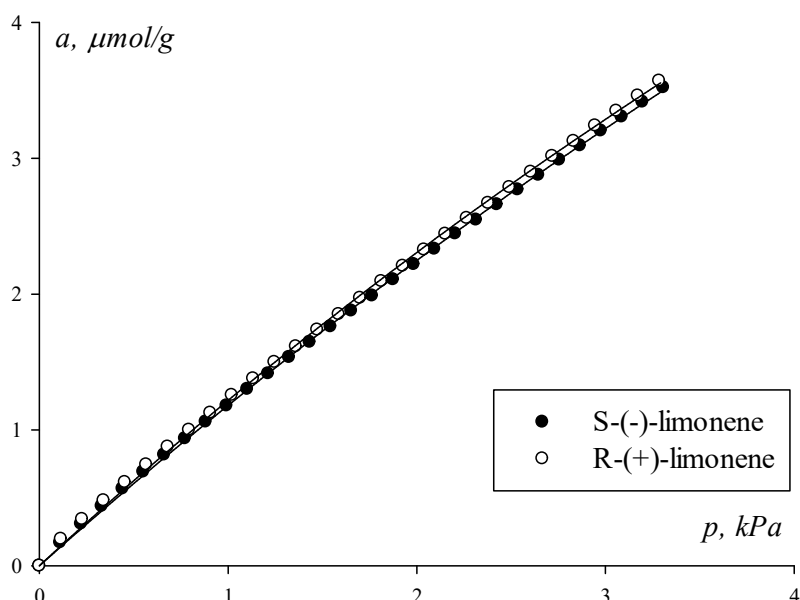


Figure 8S. Isotherm of limonene enantiomers vapours adsorption at 150 °C ( $\alpha = 0.05$ )

Table 8S. P-values for pairs of points of limonenes vapours adsorption at 150 °C ( $\alpha = 0.05$ )

p, kPa	p	p, kPa	p	p, kPa	p	p, kPa	p
<b>0.11</b>	0.0005	<b>0.67</b>	0.0001	<b>1.79</b>	0.0001	<b>3.26</b>	0.0243
<b>0.22</b>	0.0003	<b>0.78</b>	0.0001	<b>2.35</b>	0.0000		
<b>0.34</b>	0.0002	<b>1.12</b>	0.0000	<b>2.53</b>	0.2251		
<b>0.45</b>	0.0004	<b>1.23</b>	0.0001	<b>2.83</b>	0.1005		
<b>0.56</b>	0.0002	<b>1.45</b>	0.0000	<b>3.17</b>	0.1045		

Table 9S. Values of retention volumes and adsorption values for  $\alpha$ -pinene enantiomers at different temperatures

T	$V_g$ , mL/g		$\alpha$	a, $\mu\text{mol/g}$		$\alpha$
	$\alpha$ -(-)-pinene	$\alpha$ -(+)-pinene		$\alpha$ -(-)-pinene	$\alpha$ -(+)-pinene	
70	15.14	15.01	1.01	6.64	6.20	1.07
80	11.36	9.22	1.23	12.14	9.91	1.23
90	9.05	8.81	1.03	10.73	10.67	1.01
100	5.00	5.22	1.04	5.96	6.31	1.06
110	1.81	1.87	1.03	5.72	5.97	1.04
120	1.79	1.38	1.29	6.23	5.08	1.23
140	0.35	0.34	1.02	13.97	13.91	1.01

Table 10S. Values of retention volumes and adsorption values for limonene enantiomers at different temperatures

T, °C	$V_g$ , mL/g		$\alpha$	a, $\mu\text{mol/g}$		$\alpha$
	S-(-)limonene	R-(+)limonene		S-(-)limonene	R-(+)limonene	
120	2.55	2.91	1.14	3.59	3.98	1.11
130	1.84	2.11	1.15	3.63	3.96	1.10
140	1.64	1.50	1.09	3.54	3.95	1.11
150	0.88	0.87	1.00	3.52	3.68	1.05