Supporting Information (SI):

Table SI-1: Fatty acid profile of biodiesels used [derived from reference]

<table>
<thead>
<tr>
<th>FAME</th>
<th>Crypthecodinium cohnii (Microalga)</th>
<th>Cotton seed oil</th>
<th>Waste cooking oil</th>
</tr>
</thead>
<tbody>
<tr>
<td>C14:0</td>
<td>8.30</td>
<td>0.544</td>
<td>0.00</td>
</tr>
<tr>
<td>C16:0</td>
<td>22.20</td>
<td>17.854</td>
<td>11.2</td>
</tr>
<tr>
<td>C18:0</td>
<td>0.56</td>
<td>2.532</td>
<td>3.50</td>
</tr>
<tr>
<td>C18:1(Tran)</td>
<td>0.00</td>
<td>24.203</td>
<td>2.70</td>
</tr>
<tr>
<td>C18:1 (cis)</td>
<td>0.00</td>
<td>1.268</td>
<td>64.4</td>
</tr>
<tr>
<td>C18:2(cis-9,12)</td>
<td>0.00</td>
<td>50.246</td>
<td>18.3</td>
</tr>
<tr>
<td>C18:3(all cis 6,9,12)</td>
<td>0.41</td>
<td>1.537</td>
<td>0.00</td>
</tr>
<tr>
<td>C20:3</td>
<td>0.50</td>
<td>0.00</td>
<td>0.00</td>
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<tr>
<td>C20:4</td>
<td>0.70</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>C20:5 (EPA)</td>
<td>1.70</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>C22:5</td>
<td>17.90</td>
<td>0.00</td>
<td>0.00</td>
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<tr>
<td>C22:6 (DHA)</td>
<td>47.70</td>
<td>0.00</td>
<td>0.00</td>
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<tr>
<td>SFAs</td>
<td>31.06</td>
<td>21.805</td>
<td>14.72</td>
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<tr>
<td>MUFA</td>
<td>0.00</td>
<td>26.316</td>
<td>67.03</td>
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<tr>
<td>PUFA</td>
<td>68.94</td>
<td>51.879</td>
<td>18.25</td>
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<tr>
<td>Average chain length</td>
<td>20.38</td>
<td>18.94</td>
<td>18.78</td>
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<tr>
<td>Average unsaturation</td>
<td>3.46</td>
<td>1.47</td>
<td>1.03</td>
</tr>
<tr>
<td>Fuel property</td>
<td>Test method</td>
<td>Microalgal biodiesel</td>
<td>Cotton seed oil biodiesel</td>
</tr>
<tr>
<td>-------------------------------------</td>
<td>-------------</td>
<td>----------------------</td>
<td>---------------------------</td>
</tr>
<tr>
<td>CN</td>
<td>DIN 51773</td>
<td>46.5</td>
<td>87</td>
</tr>
<tr>
<td>Kinematic viscosity @40°C (mm²/s)</td>
<td>ASTM D445</td>
<td>5.06</td>
<td>4.17</td>
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<tr>
<td>Density @15°C (kg/L)</td>
<td>ASTM D4052</td>
<td>0.912</td>
<td>0.88</td>
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<tr>
<td>HHV (MJ/kg)</td>
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<td>39.86</td>
<td>39.73</td>
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<tr>
<td>LHV (MJ/kg)</td>
<td>-</td>
<td>37.42</td>
<td>37.2</td>
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<tr>
<td>Acid value (mg KOH/g)</td>
<td>ASTM D974</td>
<td>0.14</td>
<td>-</td>
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<td>Flash point (°C)</td>
<td>ASTM D93</td>
<td>95.0</td>
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<tr>
<td>Flash point (°C)</td>
<td>ASTM D93</td>
<td>-</td>
<td>≥180</td>
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<tr>
<td>Sulfur content (mg/kg)</td>
<td>ASTM D7039</td>
<td>7.5</td>
<td>-</td>
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<tr>
<td>cloud point (°C)</td>
<td>IP 309</td>
<td>16.1</td>
<td>-</td>
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<tr>
<td>Lubricity @60°C (mm)</td>
<td>IP 405</td>
<td>0.136</td>
<td>-</td>
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<tr>
<td>copper corrosion (3 hrs @50°C)</td>
<td>ASTM D130</td>
<td>1a</td>
<td>-</td>
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<tr>
<td>water sediment (vol%)</td>
<td>ASTM D2709</td>
<td>0</td>
<td>-</td>
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<tr>
<td>FBP (°C)</td>
<td>ASTM D86</td>
<td>-</td>
<td>-</td>
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<tr>
<td>Oxygen content (vol%)</td>
<td>-</td>
<td>10.47</td>
<td>10.91</td>
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<tr>
<td>Hydrogen content (vol%)</td>
<td>-</td>
<td>11.12</td>
<td>11.94</td>
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<tr>
<td>Carbon content (vol%)</td>
<td>-</td>
<td>78.41</td>
<td>77.15</td>
</tr>
</tbody>
</table>
Figure SI-1: Brake-specific TPM emissions of diesel and biodiesel blends
Figure SI-2: Brake specific TPM emissions measured by DustTrak of the diesel and biodiesel blends
Figure SI-3: Brake specific total PN emissions of the diesel and biodiesel blends