Electronic Supplementary Information (ESI)

An Efficient Atom-Economical Chemoselective CO₂ Cycloaddition using Lanthanum Oxide/Tetrabutyl Ammonium Bromide

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Figure S1. Thermogravimetric pattern of La$_2$O$_3$.

Figure S2. Partial $^1$H-NMR spectrum of a reaction mixture indicating the formation of tributylamine (TBA) as a decomposition product of TBAB.
Figure S3. Partial $^1$H-NMR spectrum of tetrabutylammonium bromide (TBAB).

Table S1. Turnover numbers (TONs) and turnover frequencies (TOFs) of the investigated binary catalytic system

<table>
<thead>
<tr>
<th>Time (h)</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>6</th>
<th>9</th>
<th>24</th>
</tr>
</thead>
<tbody>
<tr>
<td>TON (mol PC/mol La$_2$O$_3$)</td>
<td>18.6</td>
<td>36.2</td>
<td>38.5</td>
<td>55.5</td>
<td>66.3</td>
<td>69.8</td>
</tr>
<tr>
<td>TOF (mol PC/mol La$_2$O$_3$ \cdot h)</td>
<td>18.6</td>
<td>18.1</td>
<td>12.8</td>
<td>9.2</td>
<td>7.4</td>
<td>2.9</td>
</tr>
</tbody>
</table>
Figure S4. Thermogravimetric patterns of: A. TBAB. B. La$_2$O$_3$/TBAB (1:4). Upon addition of the La-precursor, TBAB decomposition was further suppressed (Decomposition temperature ($T_d$) increased from 112.1 to 126 °C.)
Figure S5. Plots of: A. ln [PO] versus time and B. 1/Pco₂ against time for the cycloaddition reaction.

Figure S6. Energy profile for the ring-closing ass a function of C---O bond distance.