Parallel Carboylation and Decarbonylative Heck Reaction on Palladium/Carbon

**Significance:** Palladium on carbon (Pd/C) catalyzed the carbonylation of aryl iodides with terephthalaldehyde as a CO source to give the corresponding products in up to 98% yield (eq. 1; 17 examples). A simultaneous parallel decarbonylative Mizoroki–Heck reaction of cinnamaldehydes with iodobenzenes (tube A) and carbonylation of 2-iodobenzyl alcohol or 2-iodobenzamide with the CO generated in situ (tube B) were carried out in the presence of Pd/C in an H-shaped tube to give trans-stilbenes and a phthalide or phthalimide, respectively (eq. 2; 6 examples).

**Comment:** No recyclability of Pd/C was observed in the parallel decarbonylative Mizoroki–Heck reaction of 4-methoxycinnamaldehyde with iodobenzene and carbonylation of 2-iodobenzyl alcohol (first reuse: 4-methoxy-trans-stilbene: 0% yield; phthalide: trace).

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**Selected results:**

<table>
<thead>
<tr>
<th>R²</th>
<th>R¹</th>
<th>Yield (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>H</td>
<td>Et</td>
<td>59%</td>
</tr>
<tr>
<td>Ac</td>
<td>r-Pr</td>
<td>29%</td>
</tr>
<tr>
<td>OMe</td>
<td>n-Bu</td>
<td>20%</td>
</tr>
<tr>
<td>OMe</td>
<td>n-Pent</td>
<td>64%</td>
</tr>
<tr>
<td>Me</td>
<td>r-Me</td>
<td>54%</td>
</tr>
</tbody>
</table>

R² = H, 88% yield
R² = Ac, 85% yield
R² = NO₂, 87% yield
R² = OMe, 75% yield

R¹ = r-Pr, 59% yield (from 2-HOCH₂C₆H₄I in i-PrOH)
R¹ = r-Bu, 20% yield (from 2-HOCH₂C₆H₄I in i-PrOH)
R¹ = n-Pent, 64% yield (from 2-HOCH₂C₆H₄I in i-PrOH)
R¹ = Me, 54% yield (from 2-HOCH₂C₆H₄I in i-PrOH)

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