Cyclohexane Desymmetrization via Rhodium-Catalyzed C–H Activation

**Significance:** The authors report a site- and stereoselective desymmetrization of cyclohexanes via a rhodium-complex-catalyzed C–H functionalization.

**Comment:** The method does not require any directing group and can be applied to unactivated C–H bonds, which presents a limitation for similar methods.

**Key words**
- desymmetrization
- C–H activation
- stereoselectivity

**Selected examples:**

<table>
<thead>
<tr>
<th>R1</th>
<th>R2</th>
<th>n</th>
<th>Yield (%)</th>
<th>ee (%)</th>
<th>rr</th>
<th>dr</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ar, Het(Ar)</td>
<td>H, Alk</td>
<td>0, 1, 2</td>
<td>up to 89</td>
<td>up to 99</td>
<td>73</td>
<td>97</td>
</tr>
<tr>
<td>(1.0 equiv)</td>
<td>(2.5 equiv)</td>
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</tr>
</tbody>
</table>

**Disubstituted cyclohexanes:**

- 73% yield 97% ee
- 75% yield 92% ee
- 58% yield 96% ee rr = 9.9:1 dr = 7.7:1
- 58% yield 98% ee rr > 50:1 dr = 9.8:1
- 41% yield 83% ee rr > 50:1 dr = 25:1
- 72% yield 90% ee rr > 50:1 dr = 11:1
- 70% yield 98% ee rr = 16:1 dr = 3.7:1
- 70% yield 94% ee rr > 50:1 dr = 2:1
- 70% yield 98% ee rr > 50:1 dr = 11:1