SUPPORTING INFORMATION

A) Catalyst preparation

**Preparation of MIL-101**: Cr\(^{3+}\)-MIL-101 was prepared according to the reported procedure.\(^i\) Briefly, 500 mg of terephthalic acid and 800 mg Cr(NO\(_3\))\(_3\)-9H\(_2\)O were dissolved in 15 mL H\(_2\)O and 40 µL HF (40%). The solution was placed inside an autoclave and kept at 200ºC for 8h in an oven. The resulting material was recovered by filtration, washed with DMF and hot ethanol, and dry at RT in air.

**Preparation of Pd@MIL-101**: The preparation procedure for this material was adapted from that reported by Pan et al.\(^ii\) Briefly, 500 mg of Cr\(^{3+}\)-MIL-101 were dried under a vacuum at 120ºC, and impregnated with 0.5 mL of an aqueous solution containing 10 mg mL\(^{-1}\) of Pd(NO\(_3\))\(_2\)-2H\(_2\)O. The solid was then dried in air and heat treated up to 200ºC under a N\(_2\) atmosphere and kept at this temperature under a H\(_2\) atmosphere for additional 2 h to reduce the palladium precursor. According to ICP, the Pd content of this samples was 0.28 wt% Pd.

B) Catalytic tests

The citronellal isomerization reaction was performed at 80ºC under a N\(_2\) atmosphere. 60 µl of racemic citronellal and 30 mg of MOF was placed inside a round bottom flask with 0.5 ml of cyclohexane. The reaction was followed by GC-MS, using dodecane as external standard. For the tandem isomerization/hydrogenation reaction, the N\(_2\) atmosphere was replaced by a H\(_2\) atmosphere (p(H\(_2\)) = 0.8 MPa). upon completion of the isomerization reaction.

C) Textural properties of the catalysts

Table S1

<table>
<thead>
<tr>
<th>Sample</th>
<th>(S_{\text{BET}}) (m(^2) g(^{-1}))</th>
<th>(V_p) (cm(^3) g(^{-1}))</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cr(^{3+})-MIL-101</td>
<td>2336</td>
<td>1.40</td>
</tr>
<tr>
<td>Pd@MIL-101</td>
<td>2182</td>
<td>0.97</td>
</tr>
<tr>
<td>Pd@MIL-101 used(^a)</td>
<td>1619</td>
<td>0.72</td>
</tr>
</tbody>
</table>

\(^a\) Material recovered after one catalytic cycle (tandem one-pot two steps isomerization/hydrogenation of citronellal to menthol at 80ºC and p(H\(_2\))=0.8 MPa).
D) XRD analysis

![XRD patterns](image)

**Fig. S1.** XRD patterns (Cu Kα radiation) of MIL-101 (black), Pd/MIL-101 before the reaction (red) and Pd/MIL-101 after the reaction (blue).

E) TEM analysis

![TEM images and particle size distributions](image)

**Fig. S2.** TEM images and particle size distributions of (top) fresh and (bottom) used Pd@MIL-101.
Fig. S3. Hot filtration test. Black curve: Conversion of citronella over Pd@MIL-101. Red curve: The reaction was carried out in the presence of Pd@MIL-101 for 1 hr. Then the catalysts was removed by filtration at the reaction temperature and the reaction was followed in the filtrate at the same temperature.

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