A. B. POWELL, S. S. STAHL* (UNIVERSITY OF WISCONSIN–MADISON, USA)
Aerobic Oxidation of Diverse Primary Alcohols to Methyl Esters with a Readily Accessible Heterogeneous Pd/Bi/Te Catalyst

Oxidative Esterification of Primary Alcohols with a Pd/Bi/Te Catalyst

5 wt% Pd/C (1 mol% Pd)  
Bi(NO$_3$)$_3$·5H$_2$O (5 mol%)  
Te (2.5 mol%)

R$^-$OH  
MeOK (1 equiv), MeOH  
O$_2$ (1 atm), 25–70 °C, 8–12 h  
6–100% yield, 32 examples

Typical results:

- 92% yield
- 92% yield
- 76% yield
- 70% yield
- 6% yield
- 87% yield
- 100% yield
- 78% yield
- 82% yield
- 19% yield
- 92% yield
- 43% yield
- 62% yield
- 90% yield
- 87% yield
- 95% yield
- 90% yield
- 85% yield
- 70% yield

**Significance:** Palladium on activated charcoal (Pd/C, 5 wt%, purchased from Sigma-Aldrich) in combination with Bi(NO$_3$)$_3$·5H$_2$O and Te catalyzed the aerobic oxidative esterification of primary alcohols to give the corresponding methyl esters in 6–100% yield (32 examples, eq. 1).

**Comment:** In the absence of Bi(NO$_3$)$_3$·5H$_2$O and Te, the oxidative esterification of 1-octanol gave methyl octanoate in 16% yield. The catalytic activity of palladium on activated charcoal was superior to that of palladium on carbon and alumina (purchased from Sigma-Aldrich).