Molecular oxygen is by far the most attractive terminal oxidant for catalyzed oxidations, one of the central transformations in organic chemistry. Guest Editor Professor Shannon Stahl has assembled a diverse set of experts in the field of catalytic aerobic oxidations, highlighting accomplishments and ongoing challenges in this important area.

Tom Rovis
aliphatic alkenyl amides
\( X = C, N \text{Ts}; \ n = 1, 2 \)

13 examples
up to 74% yield

N-heterocycles

FeCl\(_2\)-4H\(_2\)O (10 mol%)
Salicylic acid (1 equiv)
Thiourea (0 or 2 equiv)

DMSO, \( O_2 \)
100–120 °C, 24 h

27–91%
15 examples

\( NO_x / \text{Air} \)

\[
\begin{align*}
\text{R} + \text{Ar} - \text{H} & \xrightarrow{\text{Cu cat.}} \text{O}_2 \\
\text{R} & \rightarrow \text{R}
\end{align*}
\]