**Palladium-Catalyzed Reductive Heck Reaction**

**Significance:** Water represents the cheapest and most environmentally benign source of hydrogen or hydride; therefore, its use in combination with transition-metal catalysis is very appealing. In the present work, the authors present a palladium-catalyzed enantioselective reductive Heck reaction using water as final hydride donor.

**Comment:** N-Aryl acrylamides reacted in the presence of a [PdCl₂(MeCN)₂] catalyst and (S)-t-BuPHOX ligand to generate the corresponding products in good yields and good enantioselectivities using water as hydride source. The use of DABCO as a base and a catalytic amount of B₂(OH)₄ was found to be crucial for the success of the transformation. The use of deuterium oxide allowed the synthesis of D-labeled oxindoles with >90% D incorporation.

**Selected examples:**

- R¹: Me, R²: OMe, R³: NMe, yield 86%, ee 90%
- R¹: Me, R²: OMe, R³: F, yield 87%, ee 90%
- R¹: Me, R²: OMe, R³: Ph, yield 90%, ee 90%
- R¹: Me, R²: OMe, R³: MeO, yield 87%, ee 89%
- R¹: Me, R²: OMe, R³: PPh₂, yield 84%, ee 80%

Reactions performed with D₂O and B₂Cat₂:

- R¹: Me, R²: OMe, R³: F, yield 68%, ee 90%, D incorporation 92%
- R¹: Me, R²: OMe, R³: Cl, yield 63%, ee 90%, D incorporation 95%
- R¹: Me, R²: OMe, R³: MeO, yield 67%, ee 92%, D incorporation 94%
- R¹: Me, R²: OMe, R³: PPh₂, yield 64%, ee 93%, D incorporation 94%