Palladium/Catalyzed Flow C–H Functionalization of 1,2,3-Triazoles

**Significance:** A continuous-flow C–H functionalization and cyclization of 1,2,3-triazoles bearing haloaryl groups was carried out by using a coil reactor containing palladium on carbon catalyst (Pd/C) in γ-valerolactone (GVL), as a biomass-derived reaction medium, to give the corresponding cyclic compounds (eq. 1: ≤91% yield; eq. 2: ≤93% yield).

**Comment:** A long-term reaction of 4-[(2-iodophenoxy)methyl]-1-(4-methoxyphenyl)-1H-1,2,3-triazole in a coil reactor containing Pd/C for eight hours gave 24 g of the cyclized product (87% yield). MP-AES analysis of the reaction mixture showed that 0.0015% of the palladium species leached out during this long-term reaction.

**Results:**

1. **(1)**
   - R = MeO
   - X = Br, 82% yield (with TBAI)
   - X = I, 87% yield
   - X = Br, 80% yield
   - X = I, 85% yield (with TBAI)
   - X = Br, 79% yield (with TBAI)
   - X = I, 91% yield (with TBAI)

2. **(2)**
   - R = n-Octyl
   - X = I, 93% yield
   - X = Br, 90% yield (n-Hex)
   - X = Br, 90% yield (n-Hex)
   - X = Br, 92% yield
   - X = I, 80% yield (n-Butyl)
   - X = Br, 92% yield (n-Butyl)
   - X = I, 90% yield (n-Hex)
   - X = Br, 93% yield (n-Hex)
   - X = I, 92% yield (n-Hex)
   - X = Br, 83% yield (n-Butyl)
   - X = I, 82% yield (n-Hex)
   - X = Br, 92% yield (n-Hex)

**Category**
- Polymer-Supported Synthesis

**Key words**
- palladium catalysis
- C–H functionalization
- cyclization
- triazoles
- valerolactone
- continuous-flow reaction