Intramolecular Asymmetric Desymmetrization via Copper Catalysis

**Significance:** Hydroxy- and amino-functionalized C3-fragments play a pivotal role as synthetic intermediates. Whereas enantioselective desymmetrization of diols and glycerol were developed to provide hydroxyl-containing C3-fragments, the corresponding preparation of amino-containing C3-fragments has been rarely documented. Herein, Gu and co-workers present the asymmetric desymmetrization of 1,3-diazido-2-propanols catalyzed by copper–PhBox.

**Comment:** The title transformation is enabled in an enantioselective fashion by CuPF₆(MeCN)₄ in the presence of (S,S)-PhBox and NaBARF with the larger and non-coordinating BARF⁻ anion. The new method provides reliable access to enantio-enriched azido-substituted 5,6-dihydro-1,4-oxazin-2-ones, which can be further converted into useful N-containing scaffolds.

**Selected examples:**

- $\text{R} = \text{Ph}$: 96% yield, 89% ee (41 h)
- $\text{R} = \text{Cl}$: 98% yield, 90% ee (18 h)
- $\text{R} = \text{Br}$: 97% yield, 93% ee (72 h)
- $\text{R} = \text{MeO}$: 99% yield, 91% ee (53 h)
- $\text{R} = \text{Cl}$: 89% yield, 90% ee (31 h)
- $\text{R} = \text{MeO}$: 99% yield, 58% ee (43 h)
- $\text{R} = \text{MeO}$: 99% yield, 87% ee (43 h)
- $\text{R} = \text{Br}$: 98% yield, 91% ee (25 h)
- $\text{R} = \text{F}$: 98% yield, 90% ee (18 h)

**Equation:**

$$
\text{CuPF}_6(\text{MeCN})_4 (5 \text{ mol\%}) \quad \text{ligand} (6 \text{ mol\%}), \text{NaBARF} (6 \text{ mol\%}) \quad \text{CHCl}_3, -5 \degree \text{C}
$$

NaBARF = sodium tetrakis[3,5-bis-(trifluoromethyl)phenyl]borate

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