

Next Generation Azide Probes

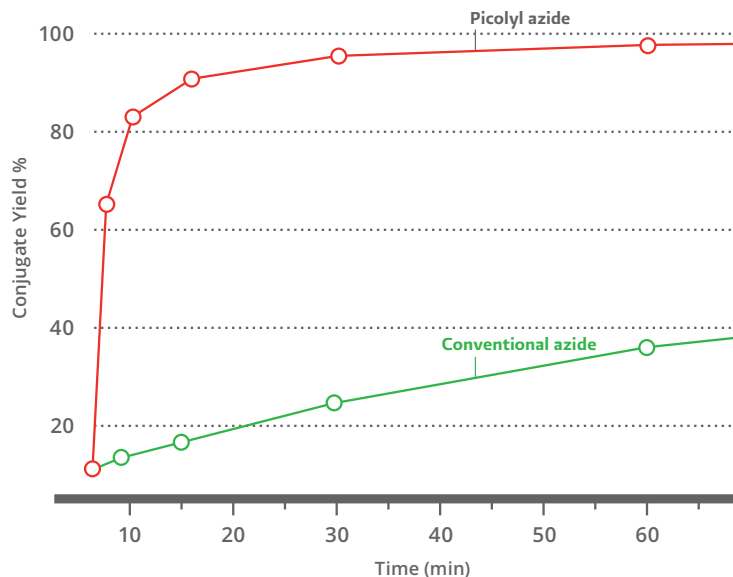


Figure 2. Conversion-time profiles of CuAAC with conventional and chelating azide.

Recent advances in design of copper chelating ligands such as THPTA or BTTAA improved kinetics of copper-catalyzed azide-alkyne cycloaddition reaction, or CuAAC and greatly increased sensitivity of alkyne detection. Despite the recent improvements CuAAC is not without limitations. The reaction kinetics is still remains slow for detection of low abundance targets. In addition, to achieve sufficient labeling efficiency many protocols call for the use of relatively high concentrations of azide reagent (up to 50 μM), and copper (up to 2 mM), which might result in high background signal due to non-specific covalent labeling.

The next step in improving kinetics of CuAAC was introduction of copper chelating moiety into azide reporter to raise the effective Cu(I) concentration at reaction site (**Figure 1**).

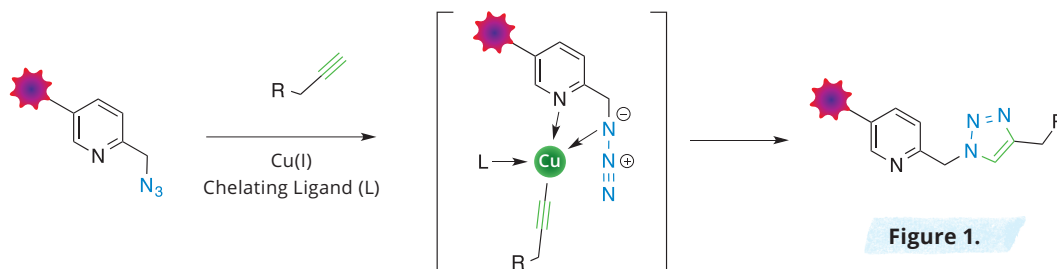


Figure 1.

The rate of CuAAC reaction depends on concentrations of all reagents, including copper, thus the raise of the effective copper concentration at the reaction site dramatically increase the rate of CuAAC reaction without the need to increase concentration of azide reagent and copper.

The only practically useful azide bearing an internal copper-chelating motif that has been reported to date are electron-donating picolyl azides. The effect of internal copper-chelating motif on the kinetics of CuAAC, and consequently on sensitivity, is so great that it leads to several fold increase in signal intensity compared to conventional, non-chelating azides. This will be of special value for the detection of low abundance targets.

In addition to the gain in sensitivity, the use of picolyl-containing reporters allows for at least a tenfold reduction in the concentration of the copper catalyst without sacrificing sensitivity of alkyne detection.

Selected References:

- Jiang, H., *et al.* (2014). Monitoring Dynamic Glycosylation in Vivo Using Supersensitive Click Chemistry. *Bioconjugate Chem.*, **25**: 698.
- Uttamapinant, C., *et al.* (2012). Fast, Cell-Compatible Click Chemistry with Copper-Chelating Azides for Biomolecular Labeling. *Angew. Chem. Int. Ed.*, **51**: 5852.
- A highly sensitive protocol for microscopy of alkyne lipids and fluorescently tagged or immunostained proteins. *J. Lipid. Res.*, **57**:1934.

Picolyl Azides

Fluorescent Picolyl Azides

Fluoroprobes offers the largest selection of picolyl azide conjugated to fluorescent dyes. Our section of fluorescent probes includes AFDyes, Cy Dyes and classic dyes conjugated to azide groups. The photophysical properties of our AFDyes are exact match to Alexa Fluor® Dyes. The combination of exceptional reactivity of picolyl azide moiety with brightness AFDyes makes these probes of special value not only for detection of low abundance target but also for all other applications where increased S/N ratio is great value.

Description	Ex/Em	Emission Color	Pkg. Size	Product #	Price
AFDye 350 Picolyl Azide	346/445	Blue	1 mg	1011-1	\$149.00
			5 mg	1011-5	\$445.00
			25 mg	1011-25	\$1395.00
AFDye 405 Picolyl Azide	402/424	Green	1 mg	1065-1	\$149.00
			5 mg	1065-5	\$445.00
			25 mg	1065-25	\$1395.00
AFDye 488 Picolyl Azide	494/517	Green	1 mg	1019-1	\$149.00
			5 mg	1019-5	\$445.00
			25 mg	1019-25	\$1395.00
AFDye 532 Picolyl Azide	532/554	Orange	1 mg	1044-1	\$149.00
			5 mg	1044-5	\$445.00
			25 mg	1044-25	\$1395.00
AFDye 546 Picolyl Azide	554/570	Orange	1 mg	1056-1	\$149.00
			5 mg	1056-5	\$445.00
			25 mg	1056-25	\$1395.00
AFDye 555 Picolyl Azide	555/572	Red	1 mg	1171-1	\$149.00
			5 mg	1171-5	\$445.00
			25 mg	1171-25	\$1395.00
AFDye 568 Picolyl Azide	578/602	Red	1 mg	1085-1	\$149.00
			5 mg	1085-5	\$445.00
			25 mg	1085-25	\$1395.00
AFDye 594 Picolyl Azide	590/617	Red	1 mg	1108-1	\$149.00
			5 mg	1108-5	\$445.00
			25 mg	1108-25	\$1395.00
AFDye 647 Picolyl Azide	648/671	Near IR	1 mg	1125-1	\$149.00
			5 mg	1125-5	\$465.00
			25 mg	1125-25	\$1495.00

Fluorescent Picolyl Azides



Fluorescent Picolyl Azides

Description	Ex/Em	Emission Color	Pkg. Size	Product #	Price
TAMRA Picolyl Azide	553/575	Orange	1 mg	1258-1	\$149.00
			5 mg	1258-5	\$395.00
			25 mg	1258-25	\$1095.00
Cy3 Picolyl Azide	555/572	Red	1 mg	1305-1	\$149.00
			5 mg	1305-5	\$395.00
			25 mg	1305-25	\$1195.00
Cy5 Picolyl Azide	647/663	Red	1 mg	1325-1	\$149.00
			5 mg	1325-5	\$395.00
			25 mg	1325-25	\$1195.00
Cy5.5 Picolyl Azide	678/694	Near IR	1 mg	1345-1	\$149.00
			5 mg	1345-5	\$395.00
			25 mg	1345-25	\$1295.00
IR 650 Picolyl Azide	651/668	Near IR	1 mg	1504-1	\$149.00
			5 mg	1504-5	\$395.00
			25 mg	1504-25	\$1295.00
IR 750 Picolyl Azide	756/776	Near IR	1 mg	1559-1	\$149.00
			5 mg	1559-5	\$395.00
			25 mg	1559-25	\$1295.00