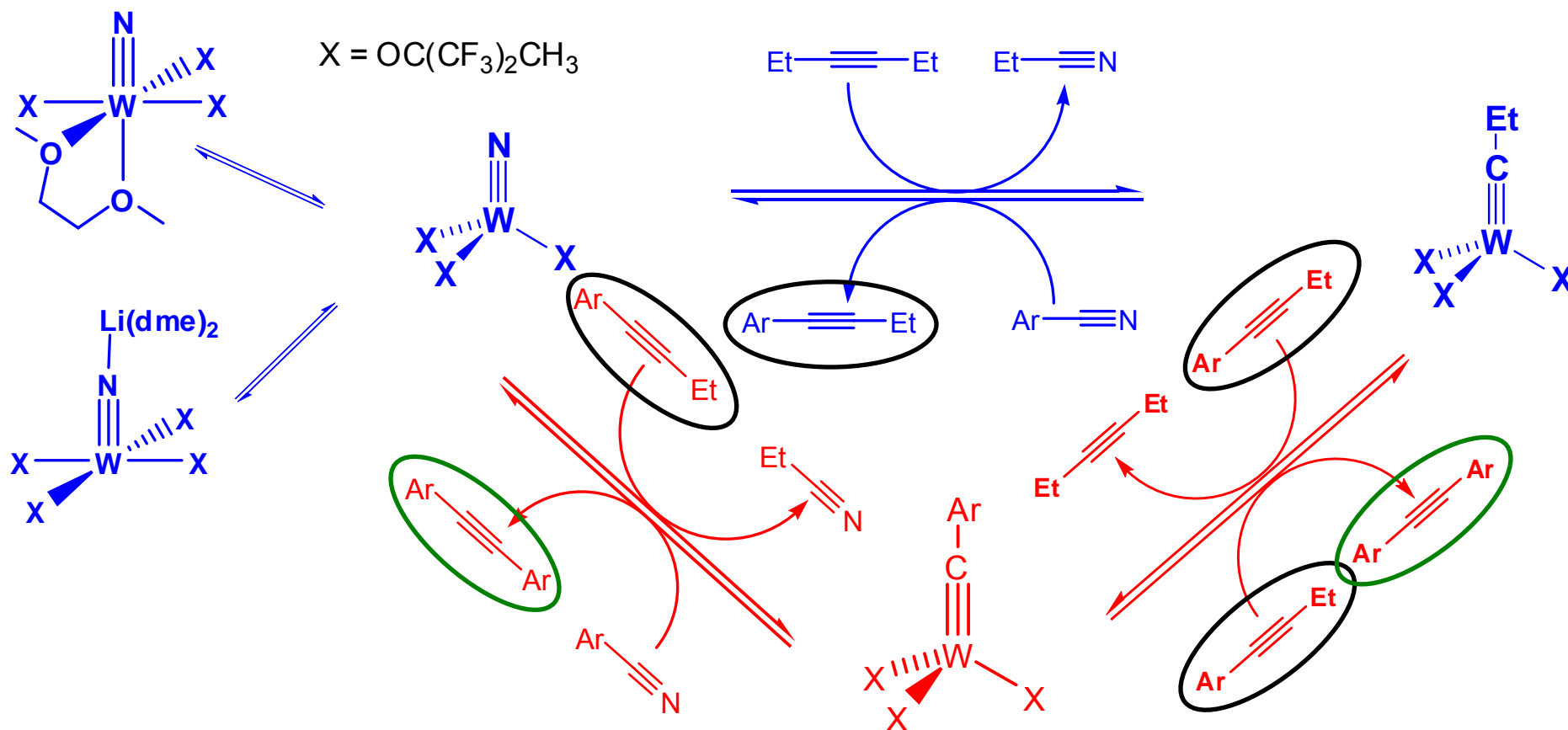
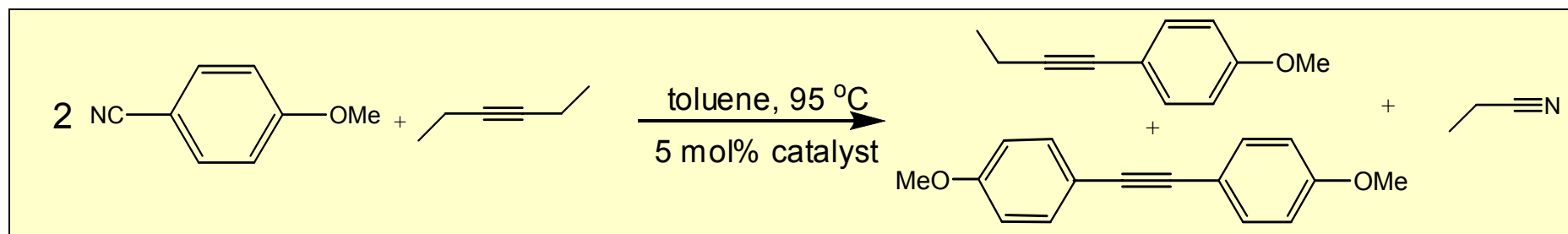
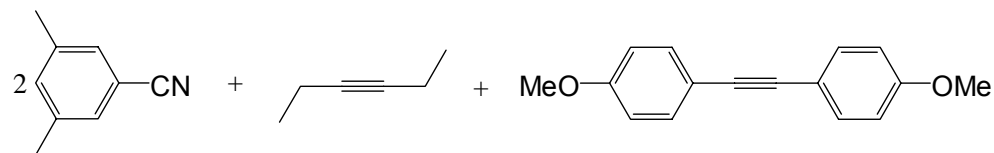


Nitrile-Alkyne Cross-Metathesis (NACM) ¹

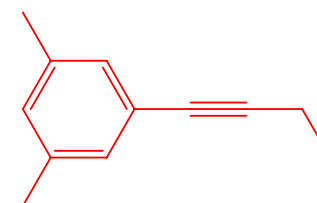
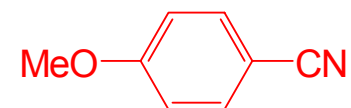
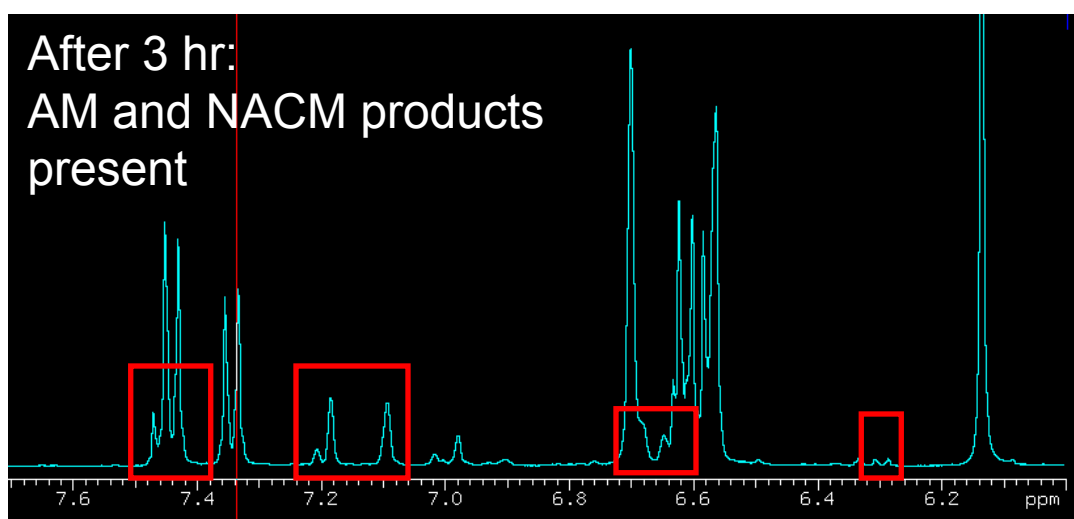
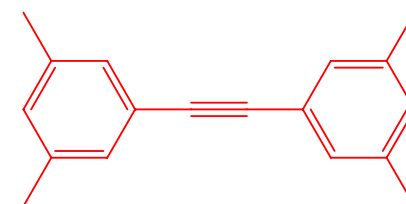
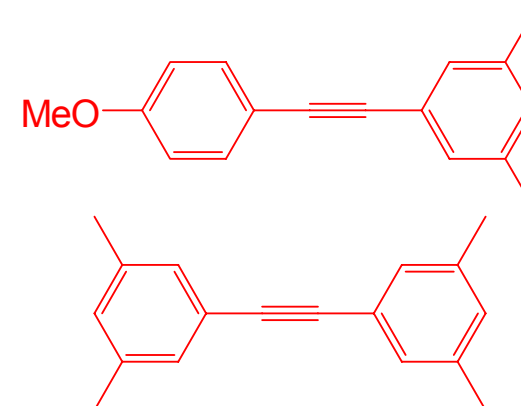
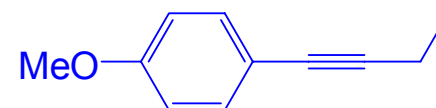
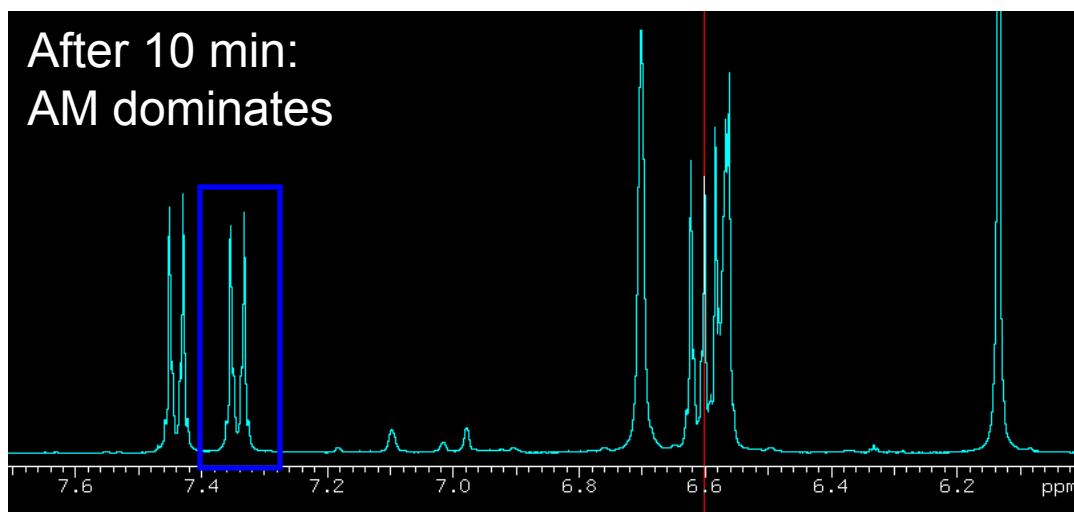


NACM vs AM

2

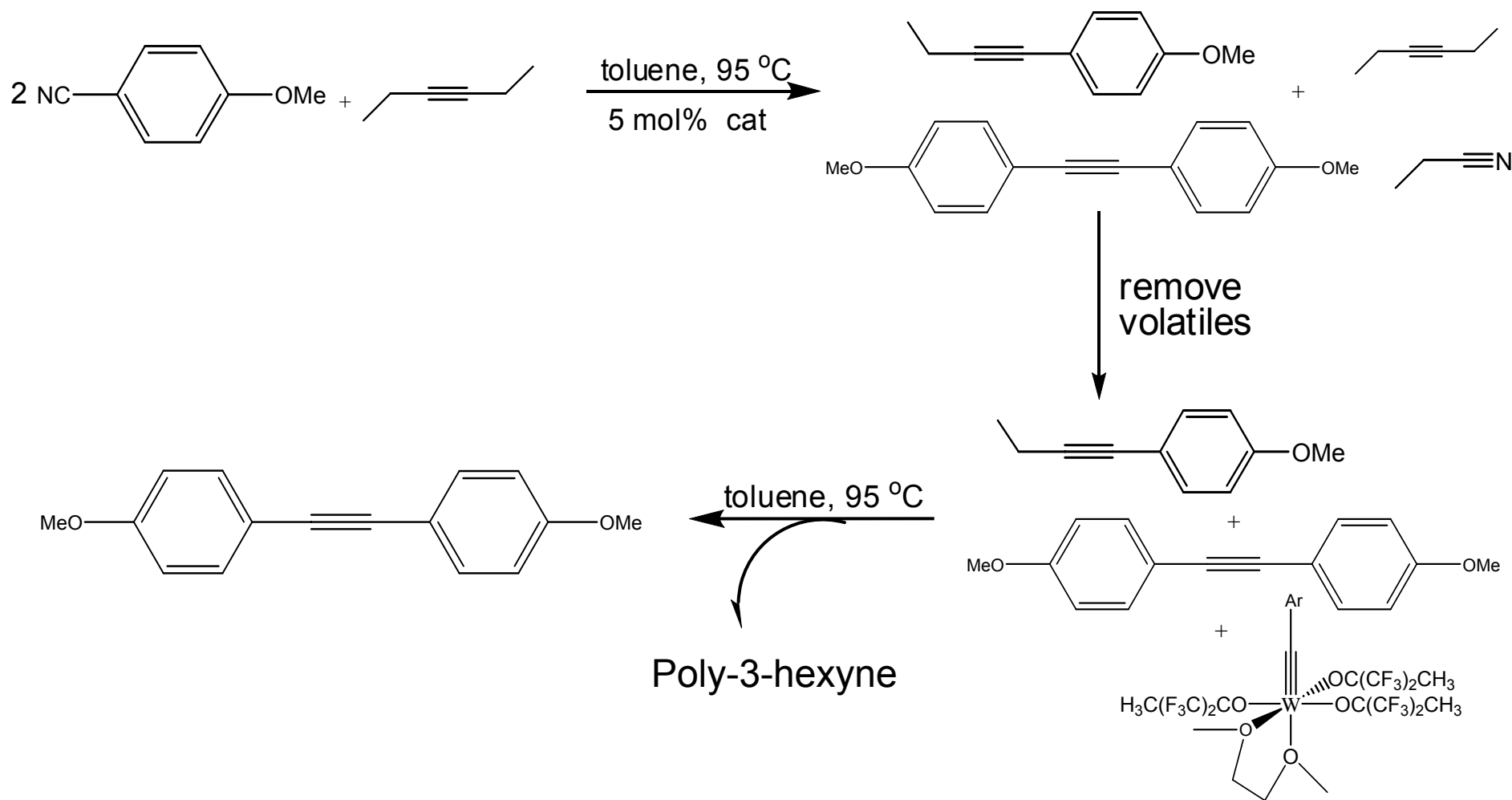


5 mol % cat
toluene-d₈
95°C

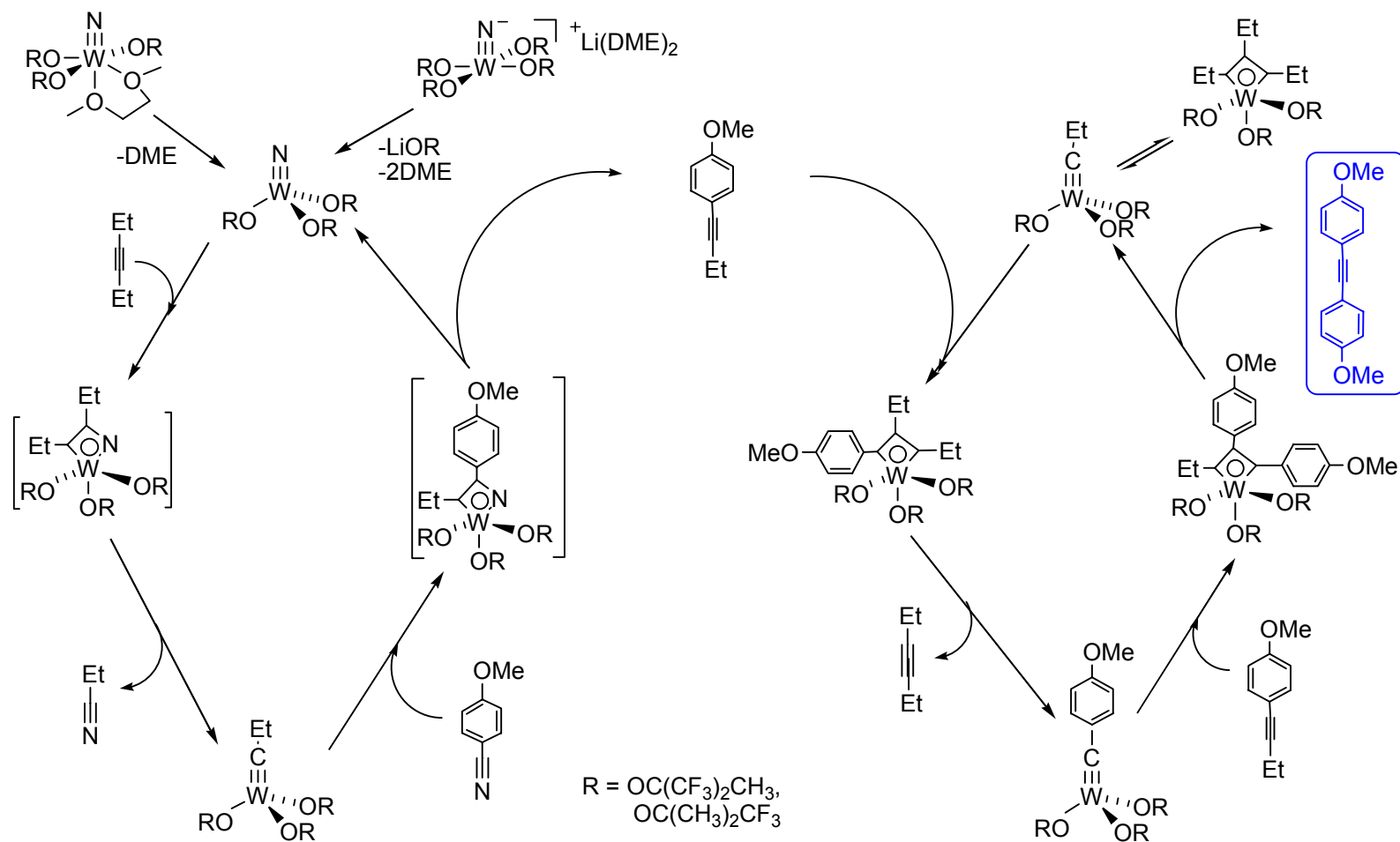


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Preferential Formation of the Symmetric Alkyne

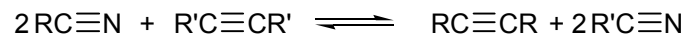
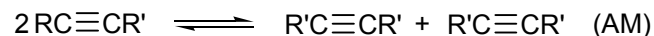
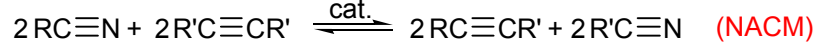


Nitrile-Alkyne Cross-Metathesis



Nitrile-Alkyne Cross Metathesis

Alkyne Metathesis



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Wiedner, E. S.;
Johnson, M. J. A. *J. Am.*
Chem. Soc. **2007**, *129*, 3800

Conclusions

- Nitrile-Alkyne Cross-Metathesis (NACM) permits alkyne synthesis from nitriles
- metal-nitride and metal-alkylidyne complexes are intermediates
- $\text{N}\equiv\text{W}(\text{OR})_3$ ($\text{R} = \text{C}(\text{CF}_3)_2\text{Me}$, CMe_2CF_3) suitable NACM catalysts
- Alkylidyne complexes $\text{R}'\text{C}\equiv\text{W}(\text{OR})_3$ also suitable NACM catalysts
- Selectivity: formation of aryl alkynes and alkyl nitriles favored enthalpically
- Catalyst activity greater for $\text{R} = \text{C}(\text{CF}_3)_2\text{Me}$
- Functional-group tolerance greater for $\text{R} = \text{CMe}_2\text{CF}_3$
- Three concurrent catalytic reactions: NACM, Alkyne Metathesis, Alkyne Polymerization