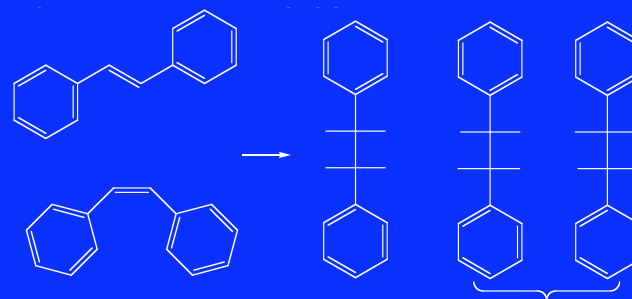


Adaptation of phase-vanishing reactions and solid-solid reactions to undergraduate organic chemistry laboratory

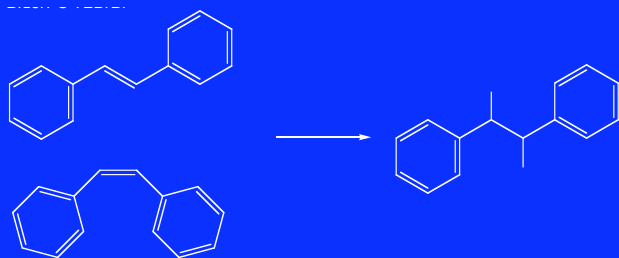
Veljko Dragojlovic
Oceanographic Center
Nova Southeastern University
Fort Lauderdale, FL



$\text{Br}_2/\text{CH}_2\text{Cl}_2$: Gilbert, J. C.; Martin, S.F. *Experimental Organic Chemistry*, 1998. 2nd ed. Saunders College Publishing, pp. 308-313.

$\text{PyH}^+\text{Br}_3^-$ and $\text{HBr}/\text{H}_2\text{O}_2$: Doxsee, K.M. Hutchison, J.E. *Green Organic Chemistry*, 2004. Brooks/Cole, pp. 120-128.

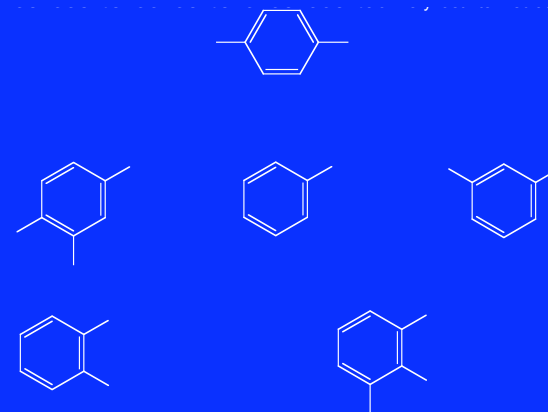
Phase-vanishing reaction



Ryu, I.; Matsubara, H.; Yasuda, S.; Nakamura, H.; Curran, D.P. *J. Am. Chem. Soc.* 2002, 124, 12946-12947.

Curran, D.P.; Werner, S. *Org. Lett.* 2004, 6, 1021-1024.

I. Relative reactivities of aldehydes





The Twelve Principles of Green Chemistry

1	Prevent waste	Y
2	Maximized incorporation of materials in the product	Y
3	Synthetic methodologies use and generate non-toxic substances	N
4	Products should preserve function while reducing toxicity	N/A
5	Use of auxiliaries should be avoided	Y
6	Energy requirements (ambient temperature and pressure)	Y
7	A raw material or feedstock should be renewable	N/A
8	Derivatization should be avoided	Y
9	Use of catalytic reagents	N/A
10	Chemical products should not persist in the environment	N/A
11	Real time, in-process monitoring and control	N/A
12	Minimize potential for chemical accidents	Y

Farquhar School of Arts and Sciences, Nova Southeastern University

Serge Gardere

veljko@nova.edu