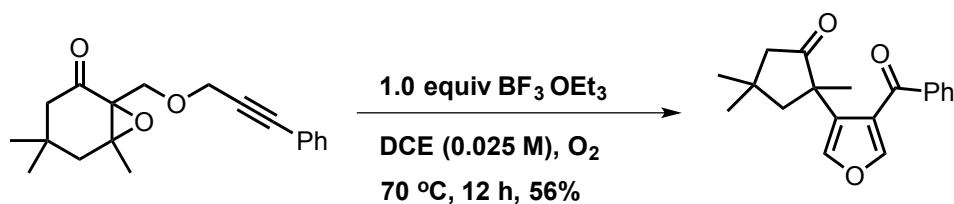


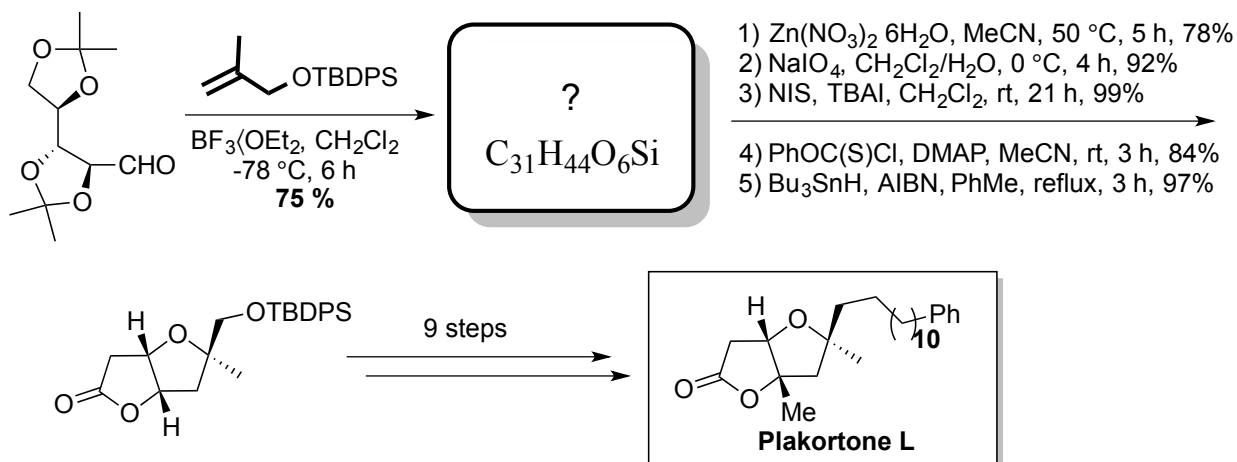
セミナー問題 (2014/6/14)

出題者: 西丸



Ming-Chang P. Yeh *et al.* *JOC*, **2013**, 78, 12381.

出題者: 小嶺



$[\alpha]_{\text{D}}^{30} -19.7$ (c 0.26, CHCl_3);

IR (KBr) 2927, 2854, 1382, 1218, 1156, 1120, 1069, 836, 706 cm^{-1} ;

^1H NMR (500 MHz, CDCl_3) σ 1.04 (s, 9H), 1.30 (s, 3H), 1.35 (s, 3H), 1.36 (s, 3H), 1.41 (s, 3H), 1.44 (s, 3H), 1.56 (s, 3H), 1.76 (d, $J = 13.3$ Hz, 1H), 2.44 (dd, $J = 13.3$, 4.6 Hz, 1H), 3.43 (d, $J = 10.1$ Hz, 1H), 3.60 (d, $J = 10.1$ Hz, 1H), 3.86 (dd, $J = 6.9$, 2.3 Hz, 1H), 3.96 (dd, $J = 2.3$, 2.3 Hz, 1H), 4.00 (dd, $J = 8.7$, 5.5 Hz, 1H), 4.10 (dd, $J = 8.7$, 6.4 Hz, 1H), 4.38 (ddd, $J = 6.9$, 6.4, 5.5 Hz, 1H), 4.42 (dd, $J = 4.6$, 2.3 Hz, 1H), 7.36 - 7.42 (m, 6H), 7.69 - 7.76 (m, 4H);

^{13}C NMR (125 MHz, CDCl_3) σ 19.1, 19.4, 24.5, 25.5, 26.8, 26.8, 29.6, 40.4, 66.8, 70.1, 70.4, 72.7, 73.9, 75.0, 83.2, 97.7, 108.7, 127.6, 127.6, 129.5, 129.6, 133.4, 133.6, 135.7, 135.8.

H. Sugimura *et al.*, *Org. Lett.* **2014**, 16, 3384