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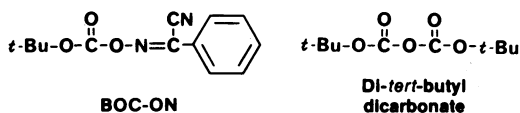
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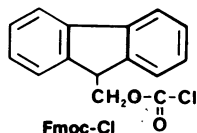
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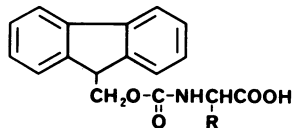
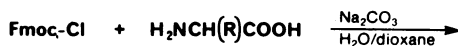
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References:

- 1) M. Itoh, D. Hagiwara, and T. Kamiya, *Bull. Chem. Soc. Jpn.*, **50**, 718 (1977).
- 2) L. Moroder, A. Hallett, E. Wunsch, O. Keller, and G. Wersin, *Hoppe-Seyler's Z. Physiol. Chem.*, **357**, 1651 (1976).
- 3) L.A. Carpino and G.Y. Han, *J. Am. Chem. Soc.*, **92**, 5748 (1970).
- 4) L.A. Carpino and G.Y. Han, *J. Org. Chem.*, **37**, 3404 (1972).
- 5) C.D. Chang and J. Meienhofer, *Int. J. Pept. Prot. Res.*, **11**, 246 (1978).
- 6) J. Meienhofer, M. Waki, E.P. Heimer, T.J. Lambros, R.C. Makofski, and C.D. Chang, *ibid.*, **13**, 35 (1979).
- 7) K. Kuromizu and J. Meienhofer, *J. Am. Chem. Soc.*, **96**, 4987 (1974).
- 8) C.D. Chang, M. Waki, M. Ahmad, J. Meienhofer, E.O. Lundell, and J.D. Haug, *Int. J. Pept. Prot. Res.*, **15**, 59 (1980).
- 9) E. Atherton, H. Fox, D. Harkiss, C.J. Logan, R.C. Sheppard, and B.J. Williams, *Chem. Commun.*, 537 (1978).
- 10) E. Atherton, H. Fox, D. Harkiss, and R.C. Sheppard, *ibid.*, 539 (1978).
- 11) G. Barany and R.B. Merrifield, *J. Am. Chem. Soc.*, **99**, 7363 (1977).

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