Perkin 1 Abstracts: Solid Phase Organic Synthesis

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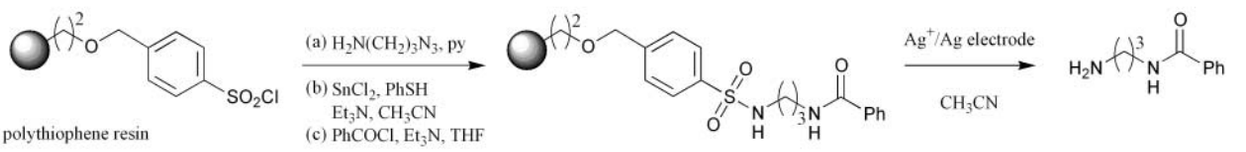
Perkin 1 Abstracts: Solid Phase Organic Synthesis are a selection of significant papers published in the recent literature covering the broad area of Solid Phase Organic Synthesis (SPOS). The abstracts cover preparation of single compounds on solid support as well as combinatorial libraries. Advances in new linker design are also covered.

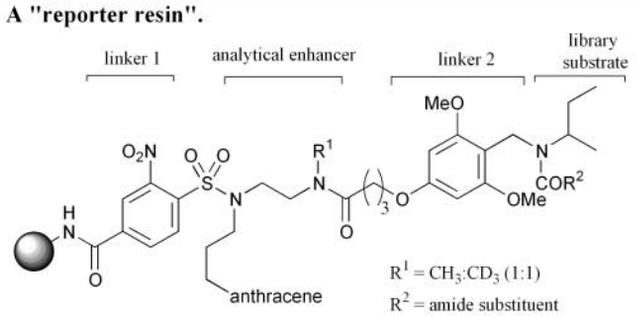
Polyamines *via* electrochemical cleavage from a polythiophene support. ***Support***



G. Marchand, J.-F. Pilard and J. Simonet, *Tetrahedron Lett.*, 2000, **41**, 883.

1 example (yield 60%, purity 95%).

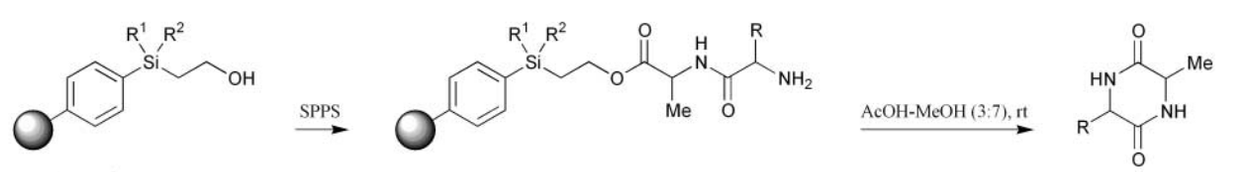
A "reporter resin". ***Support***



M. S. Congreve, M. Ladlow, P. Marshall, N. Parr, J. J. Scicinski, T. Sheppard, E. Vickerstaffe and R. A. E. Carr, *Org. Lett.*, 2001, **3**, 507.

The "reporter resin", consisting of linker 1 and the analytical enhancer, was mixed in a small proportion with ArgoGel-NH_2 resin. Linker 2 was added to the mixture of resins followed by library construction. The analytical construct contains two orthogonal linkers that allow cleavage of either the library substrate or their analytically enhanced derivatives. Monitoring of each step in the synthesis of representative library compounds was possible using small resin aliquots.

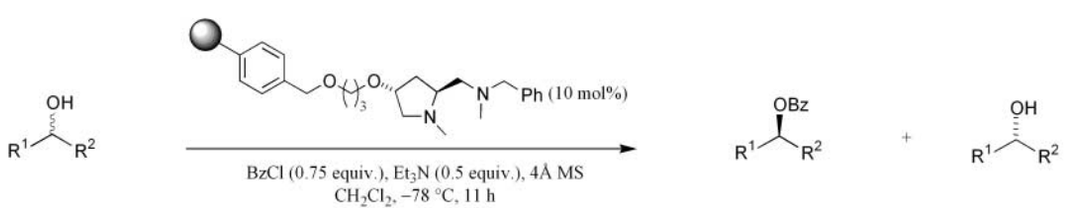
2-(Trialkylsilyl)ethyl linkers: synthesis of diketopiperazines including Tryprostatin B. ***Linker***



B. Wang, L. Chen and K. Kim, *Tetrahedron Lett.*, 2000, **42**, 1463.

3 examples (yields 76-88%, HPLC purity >99%). Synthesis of Tryprostatin B (yield 76%, HPLC purity 100%) using the illustrated linker and modifications of the linker to give access to a bromide, tosylate, 4-nitrophenyl carbonate and an imidazole carbamate linker derivative is also reported.

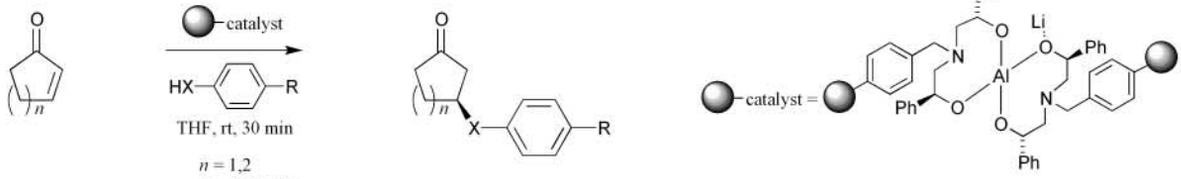
A proline-based diamine catalyst for the kinetic resolution of racemic secondary alcohols. ***Catalyst***



B. Clapham, C.-W. Cho and K. D. Janda, *J. Org. Chem.*, 2001, **66**, 868.

7 examples (yields of esters 15-53%, %ee 0, 16-96%, yields of alcohols 24-58%, %ee 14-85%). Synthesis of the illustrated catalyst in 1 step from Janda/el resin is also reported.

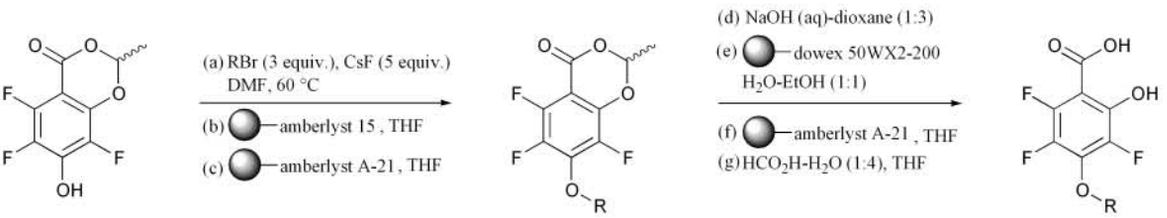
A chiral catalyst for asymmetric Michael addition reactions. ***Catalyst***



G. Sundararajan and N. Prabagaran, *Org. Lett.*, 2001, **3**, 389.

6 examples (yields 85-95%, %ee 33-76%). Preparation of the illustrated catalyst and its use in 4 asymmetric Michael additions of nitromethane to chalcone and benzylamine to ethyl cinnamate are also reported (yields 60-90%, %ee 51-82%).

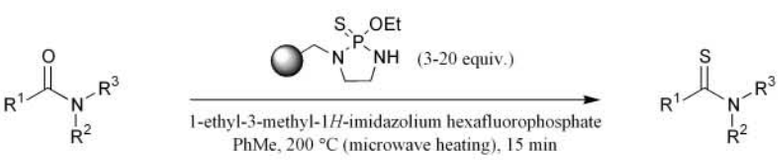
4-Alkoxy-2-hydroxy-3,5,6-trifluorobenzoic acids. ***Scavenger***



I. R. Hardcastle, A. M. Barber, J. H. Marriott and M. Jarman, *Tetrahedron Lett.*, 2001, **42**, 1363.

22 examples (yields 0-46%, LCMS purity 0-98%).

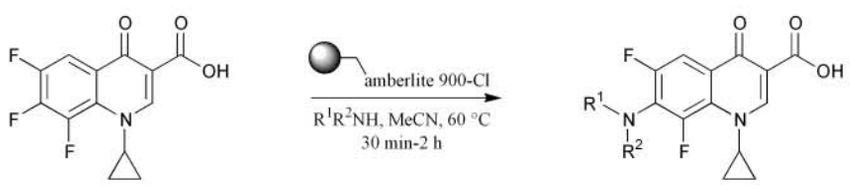
A thionating reagent. ***Reagent***



S. V. Ley, A. G. Leach and R. I. Storer, *J. Chem. Soc., Perkin Trans. 1*, 2001, 358.

9 examples (yields 60-> 99%, purity 92-98%). Preparation of 6 nitriles and 8 thioamides using the illustrated thionating agent with microwave heating (yields > 99%, purity 95-> 99%) or less efficient conventional heating (yields 68-> 99%, purity 66-94%) is reported.

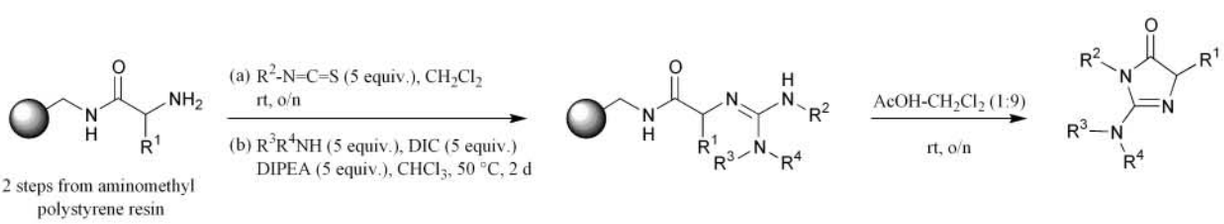
Solution-phase synthesis of fluoroquinolone antibacterial agents using a polymer-supported base. ***Reagent***



P. Hilty, C. Hubschwerlen and A. W. Thomas, *Tetrahedron Lett.*, 2001, **42**, 1645.

4 examples from a 200-member library are reported (yields 90-98%, HPLC or NMR purity >95%).

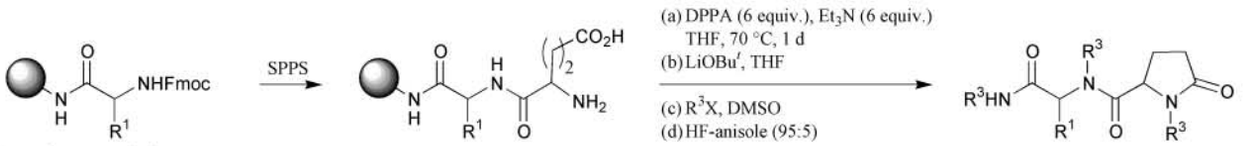
Trisubstituted 2-aminoimidazolones.



M. Li and L. J. Wilson, *Tetrahedron Lett.*, 2001, **42**, 1455.

18 examples (yields 25-89%, HPLC purity 67-100%).

1,5-Disubstituted pyrrolidin-2-ones



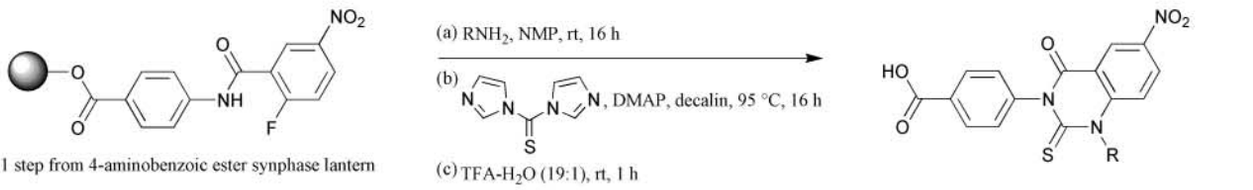
1 step from *p*-methyl-benzhydrylamine resin

DPPA = diphenylphosphoryl azide

J. M. Alvarez-Gutierrez, A. Nefzi and R. A. Houghten, *Tetrahedron Lett.*, 2000, **41**, 851.

6 examples (yields 76-100%). 3 examples of 1,5-disubstituted pyrrolidin-2-ones *via* a similar route (yields 79-96%) are also reported.

1,3-Disubstituted 2-thioxoquinazolin-4-ones

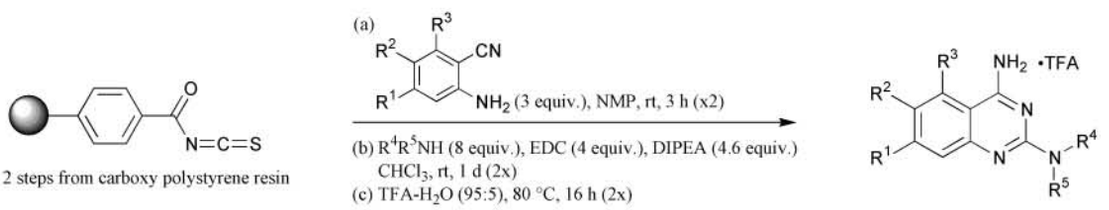


1 step from 4-aminobenzoic ester synphase lantern

10 examples (yields 59-104%, HPLC purity 68- > 95%). Reduction of the nitro group on solid support followed by derivatisation with phenylisocyanate or tosyl chloride is also reported, 2 examples (yields 85-99% HPLC purity 89-94%).

S. Makino, E. Nakanishi and T. Tsuji, *Tetrahedron Lett.*, 2001, **42**, 1749.

2,4-Diaminoquinazolines

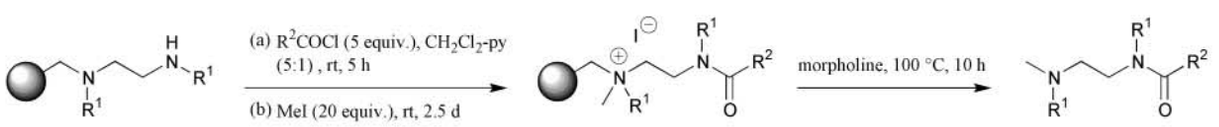


2 steps from carboxy polystyrene resin

L. J. Wilson, *Org. Lett.*, 2001, **3**, 585.

14 examples (yields 24-76 %, HPLC purity 74-98%).

A traceless synthesis of tertiary amines.

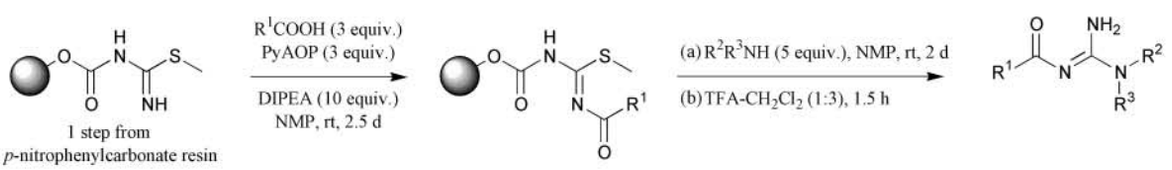


1 step from Merrifield resin

16 examples (sample yields 6-80%, sample LCMS purity 90-> 95%). Preparation of tertiary amines *via* a similar route, using a variety of alkyl halides, is also reported (yields 13-94%, ^{1}H NMR and LCMS purity 85-> 95%).

J. Cai and B. Wathey, *Tetrahedron Lett.*, 2001, **42**, 1383.

N,N'-Substituted acylguanidines.

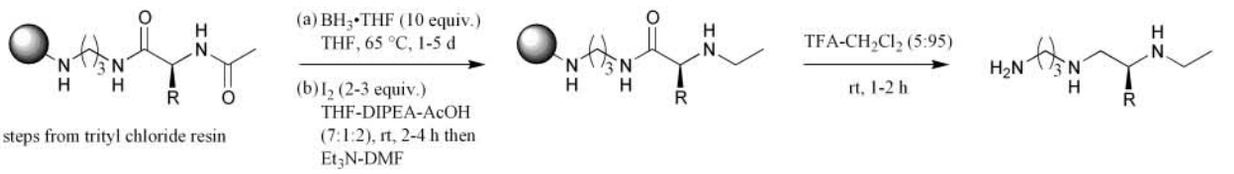


1 step from *p*-nitrophenylcarbonate resin

D. S. Dodd and Y. Zhao, *Tetrahedron Lett.*, 2001, **42**, 1259.

12 examples (yields 0, 75-85%, HPLC purity 0, 85-95%).

Chiral poylamines.

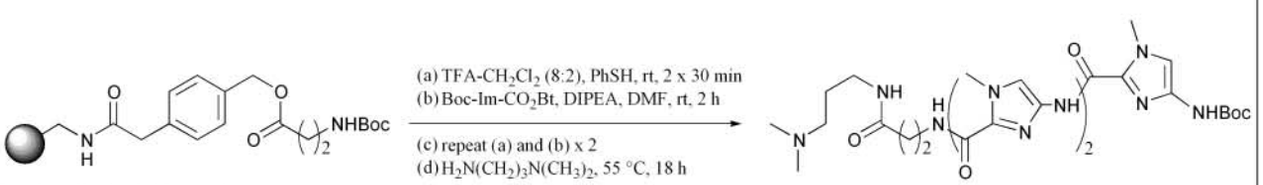


steps from trityl chloride resin

S. Manku, C. Laplante, D. Kopac, T. Chan and D. G. Hall, *J. Org. Chem.*, 2001, **66**, 874.

10 examples (yields 61-95%, ^{13}C NMR purity 80-> 95%). Reduction of tertiary amides *via* a similar route, and reaction of borane-amine intermediates with aldehydes to give *tert*-polyamines, is also reported.

DNA sequence reading polyamides.



Boc-β-analine loaded Pam resin

S. K. Sharma, M. Tandon and J. W. Lown, *J. Org. Chem.*, 2001, **66**, 1030.

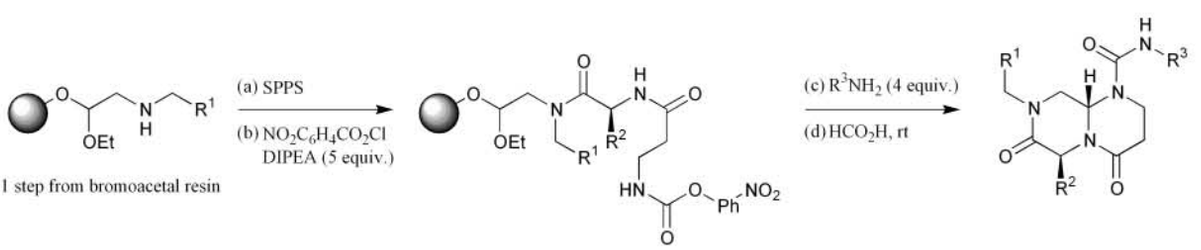
1 example (yield 55%). Solution-phase synthesis of similar DNA sequence reading polyamides containing 3 contiguous imidazole moieties is also reported

***N*-Tosyl amino alcohols: chiral auxiliaries for the enantioselective reduction of acetophenone.**

B. Altava, M. I. Burguete, M. Collado, E. García-Verdugo, S. V. Luis, R. V. Salvador and M. J. Vicent, *Tetrahedron Lett.*, 2001, **42**, 1673.

8 examples of the illustrated transformation, using different *N*-tosyl amino alcohols, are reported (yields 30-100%, %ee 5-43%). Preparation of the *N*-tosyl amino alcohols, in 2 steps from a chlorosulfonyl resin, is also reported.

Bicyclic β-turn peptidomimetics.

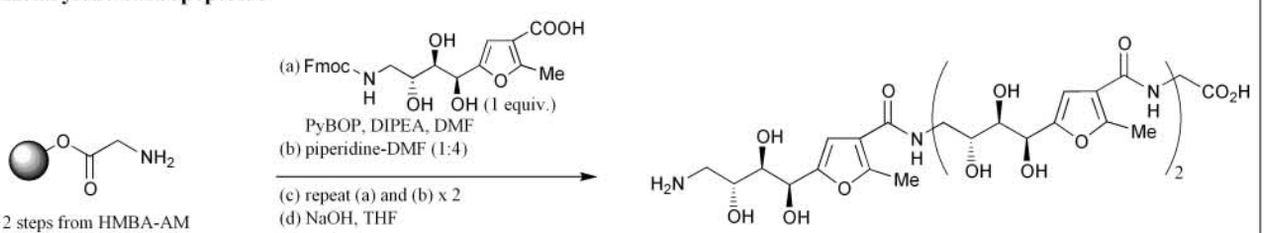


1 step from bromoacetal resin

M. Eguchi, M. S. Lee, M. Stasiak and M. Kahn, *Tetrahedron Lett.*, 2001, **42**, 1237.

12 examples (yields 26-76%).

Hetarylene-carbopeptoids



2 steps from HMBA-AM resin

A. J. Moreno-Vargas, J. G. Fernández-Bolaños, J. Fuentes and I. Robina, *Tetrahedron Lett.*, 2001, **42**, 1283.

1 example (yield 60%). Solution-phase synthesis of the illustrated building blocks is also reported.