Perkin 1 Abstracts: Solid Phase Organic Synthesis

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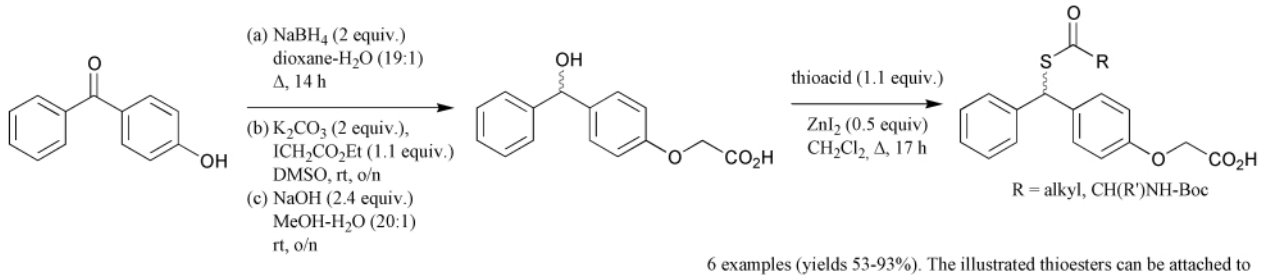
Perkin 1 Abstracts: Solid Phase Organic Synthesis are a selection of significant papers published in the recent literature covering the broad area of Solid Phase Organic Synthesis (SPOS). The abstracts cover preparation of single compounds on solid support as well as combinatorial libraries. Advances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

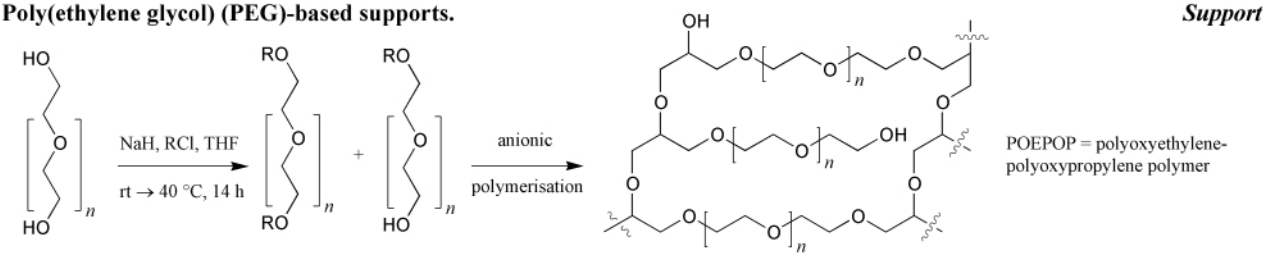
Solution phase synthesis of solid phase thioester linkers. ***Linker***



A. S. Goldstein and M. H. Gelb, *Tetrahedron Lett.*, 2000, **41**, 2797.

6 examples (yields 53-93%). The illustrated thioesters can be attached to aminomethyl resin, elongated using Boc chemistry and cleaved from the resin by HF to give the corresponding C-terminal peptide thioacids.

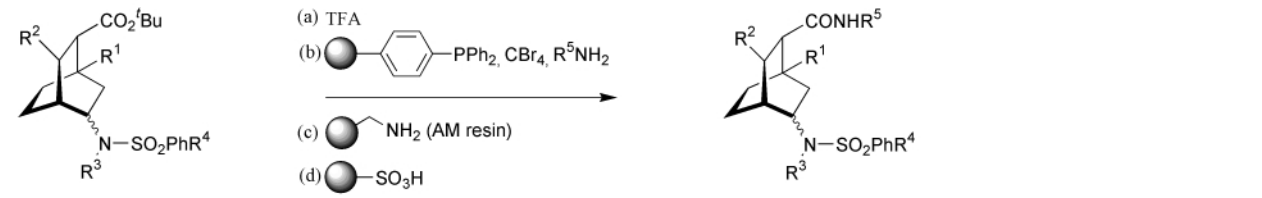
Poly(ethylene glycol) (PEG)-based supports. ***Support***



M. Grotli, C. H. Gotfredsen, J. Rademann, J. Buchardt, A. J. Clark, J. Duus and M. Meldal, *J. Comb. Chem.*, 2000, **2**, 108.

Preparation of 2 other (PEG)-based supports, *via* cation and radical polymerisation respectively, is reported. The (PEG)-based supports provide better resolved NMR spectra, possess higher loading capacity and better swelling in a broad range of solvents, compared to PEG-grafted resins.

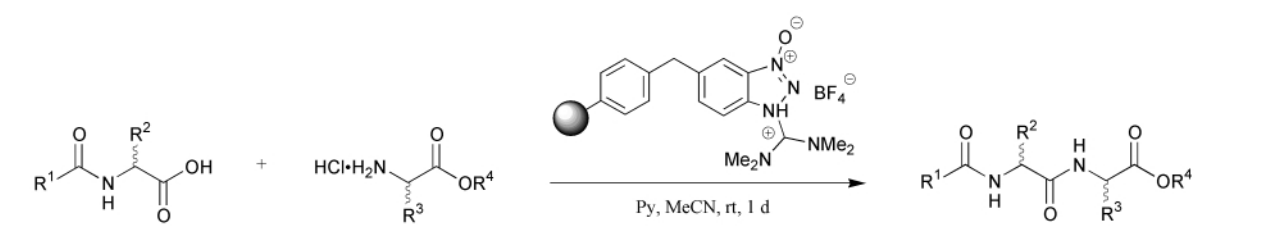
Preparation of bicyclo[2.2.2]octane derivatives. ***Reagent***



S. V. Ley and A. Massi, *J. Comb. Chem.*, 2000, **2**, 104.

Five-step preparation of bicyclo[2.2.2]octane derivatives using polymer supported reagents and sequestration agents is reported. Each step produces 5 independent libraries with the final illustrated 16-member library possessing 5 sites of diversity (yields 71-98%, ^{1}H NMR, LC-MS or GC purity 90-95%).

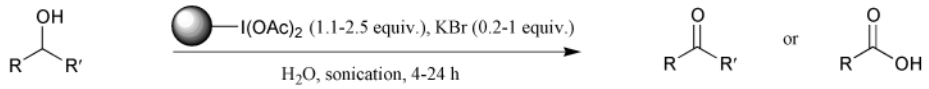
Polymer-bound TBTU: a reagent for peptide synthesis. ***Reagent***



R. Chinchilla, D. J. Dodsworth, C. Nájera and J. M. Soriano, *Tetrahedron Lett.*, 2000, **41**, 2463.

12 examples (yields 15-82%). Preparation of the illustrated polymer bound TBTU from polystyrene-2% divinylbenzene copolymer is also reported.

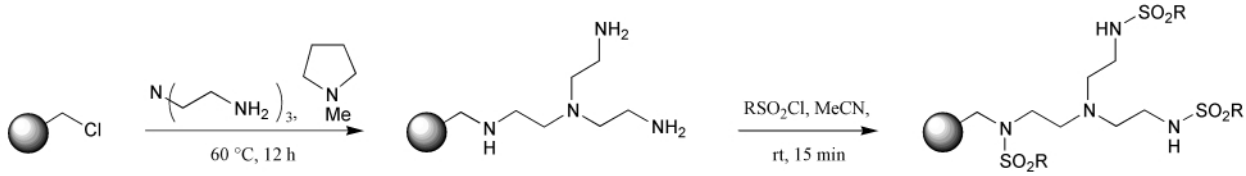
Oxidation of alcohols in water using polymer-supported hypervalent iodine(III). ***Reagent***



H. Tohma, S. Takizawa, T. Maegawa and Y. Kita, *Angew. Chem., Int. Ed.*, 2000, **39**, 1306.

5 examples (yields 86-100%). 18 examples of primary and secondary alcohol oxidation, using solution-phase iodosobenzene catalytically activated by KBr, are also reported (yields 76-100%).

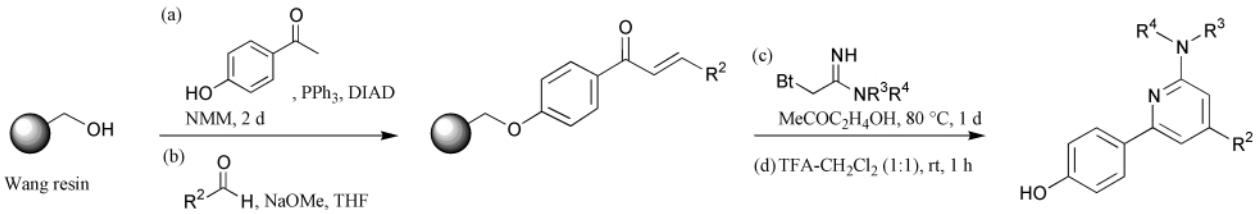
Alternative supports for solid phase scavengers in non-swelling solvents. ***Scavenger***



R. B. Nicewonger, L. Ditto and L. Varady, *Tetrahedron Lett.*, 2000, **41**, 2323.

Synthesis of the illustrated aminated, highly cross-linked poly(styrene-divinylbenzene) resin and subsequent scavenging of sulfonyl chlorides is reported.

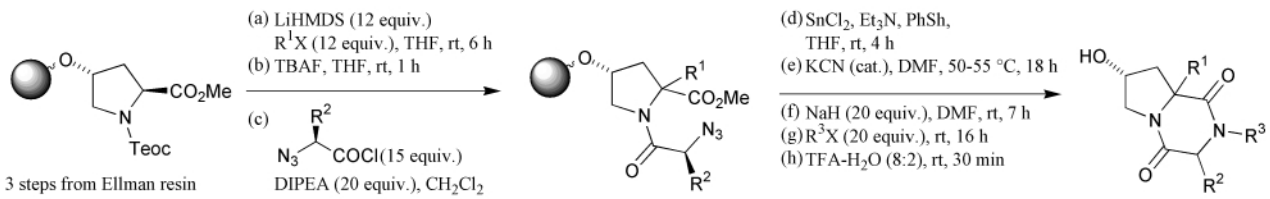
2-Alkylamino- and 2-dialkylamino-4,6-diarylpyridines and 2,4,6-trisubstituted pyrimidines.



A. R. Katritzky, L. Serdyuk, C. Chassaing, D. Toader, X. Wang, B. Forood, B. Flatt, C. Sun and K. Vo, *J. Comb. Chem.*, 2000, **2**, 182.

10 examples (LC-MS purity 75-95%). Preparation of 3 trisubstituted pyrimidines *via* a similar route is also reported (LC-MS purity 70-93%).

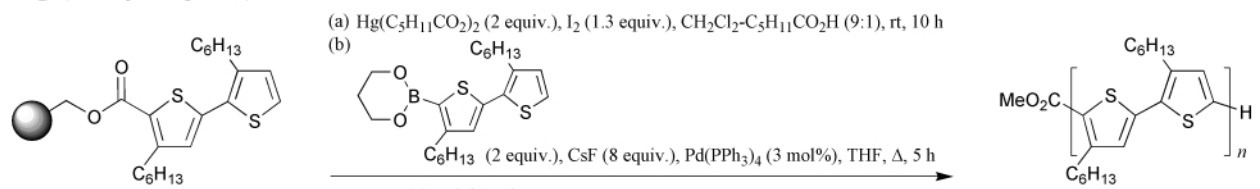
Substituted hydroxyproline-based 2,5-diketopiperazines.



A. Bianco, C. P. Sonksen, P. Roepstorff and J.-P. Briand, *J. Org. Chem.*, 2000, **65**, 2179.

10 examples (HPLC purity 40-77%). Preparation of a further 20 diketopiperazines *via* a similar route is also reported (HPLC purity 51-90%).

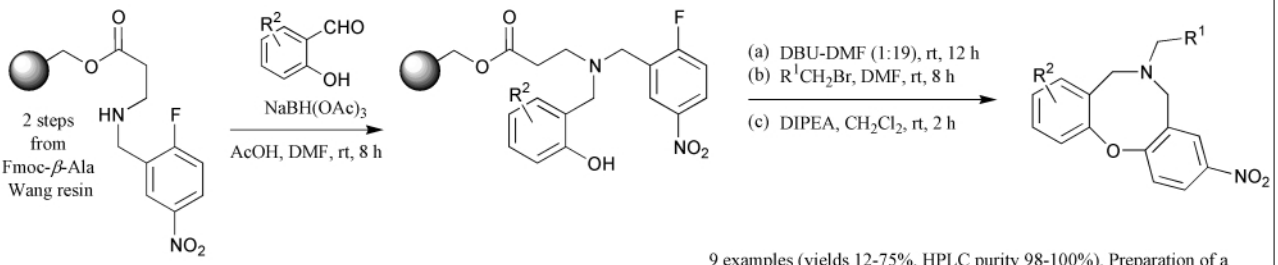
Oligo(3-hexylthiophene)s.



T. Kirschbaum, C. A. Briehn and P. Bäuerle, *J. Chem. Soc., Perkin Trans. 1*, 2000, 1211.

3 examples (yields 15-93%, HPLC purity >99%). 3 further solution-phase steps generate the corresponding non-functionalised oligo(3-hexylthiophene)s (yields 95-97%).

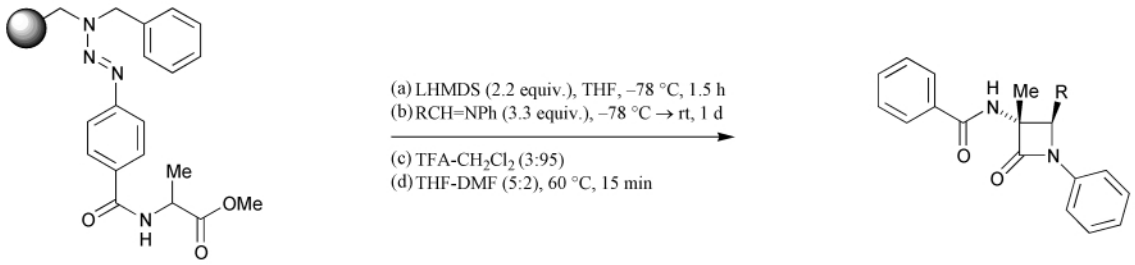
Substituted dibenzo[*b*,*g*][1,5]oxazocines.



X. Ouyang, Z. Chen, L. Liu, C. Dominguez and A. S. Kiselyov, *Tetrahedron*, 2000, **56**, 2369.

9 examples (yields 12-75%, HPLC purity 98-100%). Preparation of a further 8 dibenzo[*b*,*g*][1,5]oxazocines *via* a similar route is also reported (yields 20-78%, HPLC purity 100%).

Traceless synthesis of β-lactams *via* an ester enolate-imine condensation.

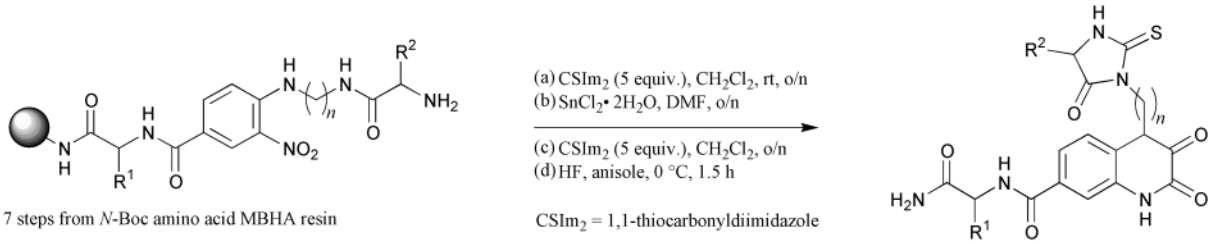


2 steps from benzylamine resin

S. Shunk and D. Enders, *Org. Lett.*, 2000, **2**, 907.

8 examples (yields 53-91%, ^{1}H NMR, ^{13}C NMR and MS purity 88-98%, %de 50-96%).

Branched thiohydantoin benzimidazolinethiones and branched thiohydantoin tetrahydroquinoxalinediones.



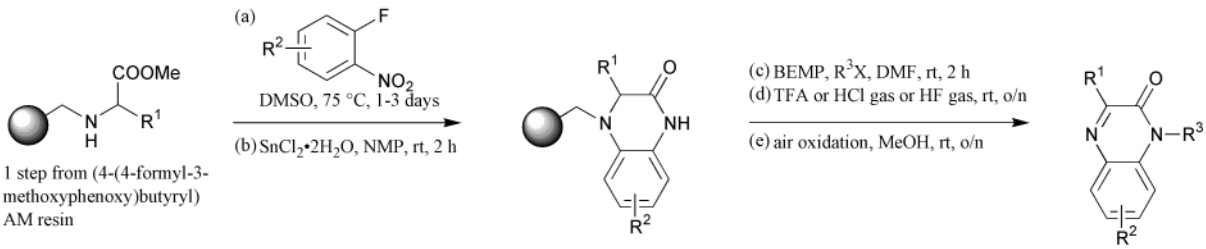
7 steps from *N*-Boc amino acid MBHA resin

$CSIm_2$ = 1,1-thiocarbonyldiimidazole

A. Nefzi, M. A. Giulianotti and R. A. Houghten, *Tetrahedron Lett.*, 2000, **41**, 2283.

11 examples (LC-MS purity 71-92%). Preparation of 11 branched thiohydantoin benzimidazolinethiones *via* a similar route is also reported (11 examples, LC-MS purity 75-91%).

Traceless synthesis of quinoxalinones.

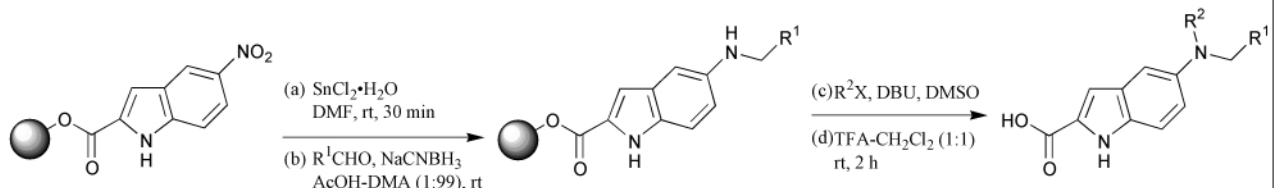


1 step from (4-(4-formyl-3-methoxyphenoxy)butyryl) AM resin

V. Krchnák, L. Szabo and J. Vágner, *Tetrahedron Lett.*, 2000, **41**, 2835.

10 examples (yields 53-91%, HPLC purity 84-99%).

5-Substituted 2-carboxyindoles.

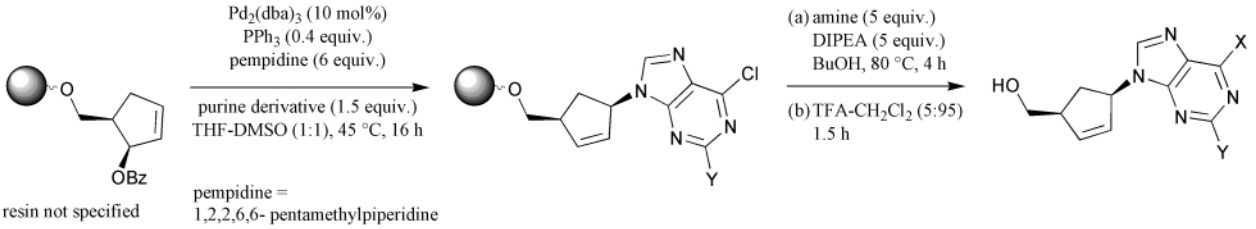


1 step from Wang resin

J. Tois, R. Franzén, O. Aitio, K. Huikko and J. Taskinen, *Tetrahedron Lett.*, 2000, **41**, 2443.

8 examples (yields 40-75%).

Carbocyclic nucleosides.



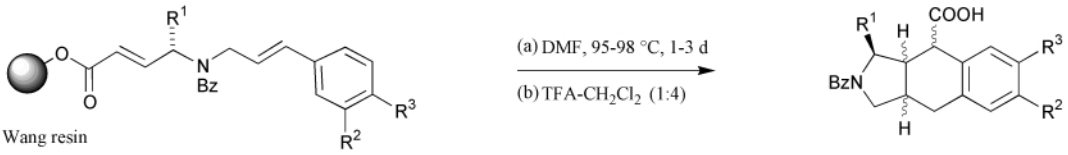
resin not specified

pempidine = 1,2,2,6,6- pentamethylpiperidine

M. T. Crimmins and W. J. Zuercher, *Org. Lett.*, 2000, **2**, 1065.

9 examples (yields 60-82%).

Vinylbenzenes as dienes in Diels–Alder reactions.

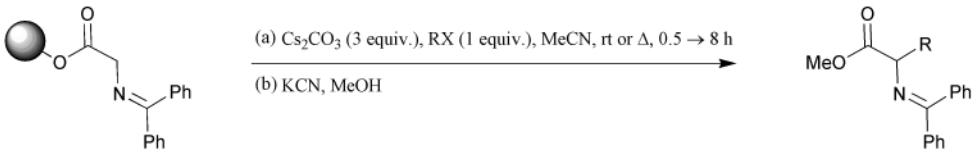


Wang resin

8 examples (yields 0, 27-98%). A computational study of the activation energies of the illustrated dienes in the Diels–Alder reaction is also reported.

S. Sun, I. J. Turchi, D. Xu and W. V. Murray, *J. Org. Chem.*, 2000, **65**, 2555.

Liquid-phase synthesis of α-amino acid derivatives.

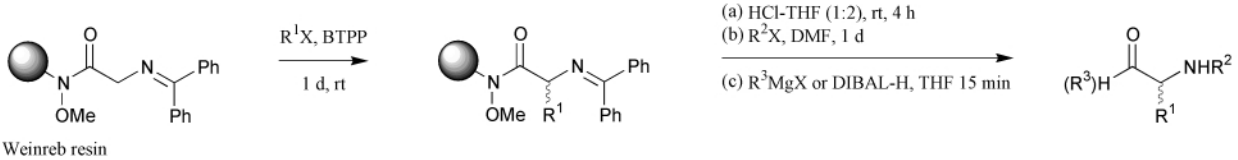


3 steps from soluble poly(ethylene glycol)

9 examples (yields 75-98%). The presence of the polymer provided a phase-transfer catalyst environment which accelerated the illustrated reactions.

B. Sauvagnat, K. Kulig, F. Lamaty, R. Lazaro and J. Martinez, *J. Comb. Chem.*, 2000, **2**, 134.

Aldehyde and ketone derivatives of unnatural amino acids and peptides.

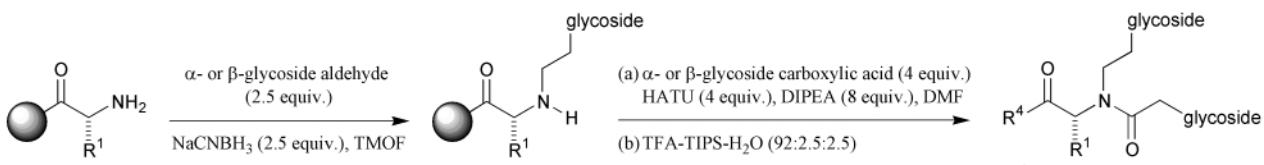


Weinreb resin

16 examples (yields 0, 27-87%, HPLC purity 56-95%). Preparation of 4 peptide aldehydes and 4 peptide ketones *via* a similar route is also reported (yields 31-82%).

M. J. O'Donnell, M. D. Drew, R. S. Pottorf and W. L. Scott, *J. Comb. Chem.*, 2000, **2**, 172.

Neoglycopeptides



1 step from amino acid Wang resin or 3 steps from Rink amide and tentagel resins

25 examples (yields 30-75%). Preparation of 14 *N*-terminal, *C*-linked diglycosyl branched dipeptides and 19 *C*-linked neoglycopeptides *via* similar routes is also reported.

P. Arya, K. M. K. Kutterer and A. Barkley, *J. Comb. Chem.*, 2000, **2**, 120.