FORMATO EUROPEO PER IL CURRICULUM VITAE

INFORMAZIONI PERSONALI

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Nazionalità	
Data di nascita	

ESPERIENZA LAVORATIVA

• Date (da – a)	Dal 25 novembre 2013 al 30 maggio 2014
• Nome e indirizzo del datore di lavoro	CFP Zanardelli U.O. di Edolo via marconi 73
• Tipo di azienda o settore	Istruzione - Scuola professionale
• Tipo di impiego	Collaboratore partita iva
• Principali mansioni e responsabilità	Insegnante di dermatologia, anatomia, cosmetologia, igiene e scienze mediche
• Date (da – a)	Da novembre 2006 ad oggi titolare di Parafarmacia
• Nome e indirizzo del datore di lavoro	Parafarmacia Sanitaria Dott.ssa Tamagni Roberta, Edolo (BS)
• Tipo di azienda o settore	Esercizio di vicinato
• Tipo di impiego	Titolare
• Principali mansioni e responsabilità	Titolare e direttore dell'esercizio
• Date (da – a)	Da settembre 2005 ad agosto 2006
• Nome e indirizzo del datore di lavoro	Farmacia Dott.ssa Ghirardi, Incudine (BS)
• Tipo di azienda o settore	Farmacia
• Tipo di impiego	Dipendente
• Principali mansioni e responsabilità	Farmacista collaboratore
• Date (da – a)	Da febbraio 2004 ad settembre 2005
• Nome e indirizzo del datore di lavoro	Farmacia Dott. De Rossi, Edolo (BS)
• Tipo di azienda o settore	Farmacia
• Tipo di impiego	Dipendente
• Principali mansioni e responsabilità	Farmacista collaboratore
• Date (da – a)	Da ottobre 2001 a gennaio 2004

• Nome e indirizzo del datore di lavoro	Farmacia Murachelli del Dott. Putelli
• Tipo di azienda o settore	Farmacia
• Tipo di impiego	Dipendente
• Principali mansioni e responsabilità	Farmacista collaboratore
• Date (da – a)	Dal febbraio 1999 a settembre 2001
• Nome e indirizzo del datore di lavoro	Glaxo SmithKline, Verona
• Tipo di azienda o settore	Azienda Farmaceutica
• Tipo di impiego	Dipendente
• Principali mansioni e responsabilità	Informatore medico-scentifico
• Date (da – a)	Da luglio 1998 a gennaio 1999
• Nome e indirizzo del datore di lavoro	Mediolanum Farmaceutici, Milano
• Tipo di azienda o settore	Azienda Farmaceutica
• Tipo di impiego	Collaboratore
• Principali mansioni e responsabilità	Informatore medico-scentifico

ISTRUZIONE E FORMAZIONE

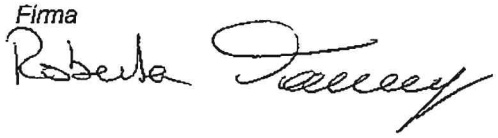
• Date (da – a)	Dal 1991/92 al 1997/98
• Nome e tipo di istituto di istruzione o formazione	Facoltà di Farmacia – Corso di Laurea Chimica e tecnologie farmaceutiche – Università degli studi di Padova
• Principali materie / abilità professionali oggetto dello studio	Chimica, Farmacologia, Laboratori
• Qualifica conseguita	Laurea
• Livello nella classificazione nazionale (se pertinente)	110/110 e lode
• Date (da – a)	Dal 1985/86 al 1990/91
• Nome e tipo di istituto di istruzione o formazione	Istituto professionale per il commercio – tecnico di laboratorio chimico biologico
• Principali materie / abilità professionali oggetto dello studio	Chimica, microbiologia, laboratorio
• Qualifica conseguita	Diploma
• Livello nella classificazione nazionale (se pertinente)	60/60

• Date (da – a)	2011/2012
• Nome e tipo di istituto di istruzione o formazione	Master Universitario in Fitoterapia Applicata di II livello presso Università degli Studi di Siena facoltà di Farmacia
• Principali materie / abilità professionali oggetto dello studio	Conoscenza e utilizzo delle piante medicinali, nutriceutica, terapie probiotiche e prebiotiche
• Qualifica conseguita	Specializzazione in Fitoterapia applicata
• Livello nella classificazione nazionale (se pertinente)	

CAPACITÀ E COMPETENZE PERSONALI *Acquisite nel corso della vita e della carriera ma non necessariamente riconosciute da certificati e diplomi ufficiali.*	
MADRELINGUA	**ITALIANA**
ALTRE LINGUA	
	INGLESE
• Capacità di lettura	ELEMENTARE
• Capacità di scrittura	ELEMENTARE
• Capacità di espressione orale	BUONO
CAPACITÀ E COMPETENZE RELAZIONALI *Vivere e lavorare con altre persone, in ambiente multiculturale, occupando posti in cui la comunicazione è importante e in situazioni in cui è essenziale lavorare in squadra (ad es. cultura e sport), ecc.*	CAPACITÀ RELAZIONALI SVILUPPATE CON L'ESPERIENZA ED IN SEGUITO A CORSI SULLE TECNICHE DI VENDITA E DI MARKETING ESPERIENZA UNIVERSITARIA ALL'ESTERO, PROGETTO ERASMUS: UNIVERSITÀ DI BANGOR GALLES UK
CAPACITÀ E COMPETENZE ORGANIZZATIVE *Ad es. coordinamento e amministrazione di persone, progetti, bilanci; sul posto di lavoro, in attività di volontariato (ad es. cultura e sport), a casa, ecc.*	Capacità organizzative e amministrative sviluppate sul campo legate alla mansione di titolare di parafarmacia, all'esperienza di informatore scientifico del farmaco e di madre di tre figli
CAPACITÀ E COMPETENZE TECNICHE *Con computer, attrezzature specifiche, macchinari, ecc.*	CONOSCENZA DI BASE DEL SISTEMA OPERATIVO E DEL PACCHETTO OFFICE E GESTIONALE FARMACIA.
CAPACITÀ E COMPETENZE ARTISTICHE *Musica, scrittura, disegno ecc.*	APPASSIONATA DI LETTURA, DI DANZA E DI RUNNING
ALTRE CAPACITÀ E COMPETENZE *Competenze non precedentemente indicate.*	PUBBLICAZIONE DEL LAVORO SVOLTO DURANTE IL PROGETTO ERASMUS VEDI ALLEGATO
PATENTE O PATENTI	Tipo B
ULTERIORI INFORMAZIONI	La Parafarmacia di cui sono titolare si è specializzata negli ultimi anni nell'organizzazione di incontri informativi gratuiti relativi ai vari temi della salute con particolare competenza nel settore della prima infanzia; ossia offriamo consulenze sull'allattamento materno, svezzamento, portare i piccoli con la fascia e nozioni di pronto soccorso pediatrico. Inoltre, sempre per mia iniziativa, abbiamo strutturato uno spazio dedicato ai bisogni del bebè ossia dove la mamma può pesare, allattare o cambiare il proprio bambino.
ALLEGATI	ALLEGATO 1: PUBBLICAZIONE

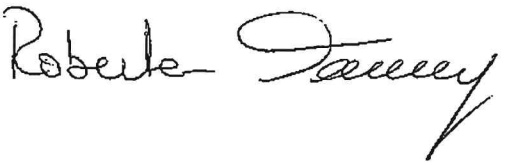
Il sottoscritto, ai sensi dell'art. 46 DPR 28.12.2000 n. 445, dichiara veritiero tutto ciò che viene riportato e di essere consapevole delle responsabilità penali e civili a cui va incontro in caso di dichiarazione mendace, oltre alla conseguente immediata decadenza dei benefici eventualmente acquisiti sulla base della dichiarazione non veritiera.

Firma



Acconsento al trattamento dei dati personali ai sensi della vigente normativa in materia di privacy, D.L. 30 giugno 2003 n. 196."

Firma



COMMUNICATION

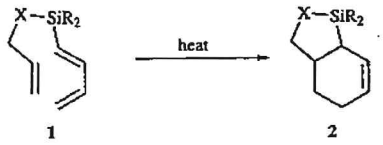
Convenient synthesis of silyl substituted butadienes; a new route to silicon tethered intramolecular Diels–Alder reaction precursors

Klaus Kahle, Patrick J. Murphy,*† Jonathan Scott and Roberta Tamagni

Department of Chemistry, University of Wales, Bangor, Gwynedd LL57 2UW, UK

The preparation of a series of silyl substituted butadienes is reported together with their application in the silicon-tethered intramolecular Diels–Alder reaction (IMDA).

Silyl substituted butadienes are intermediates of considerable potential as substrates for the Diels–Alder reaction.[1] We were particularly interested in investigating and developing their use in an intramolecular variant of this reaction, our goal being the preparation of a range of substrates with the generalised structure **1** which we hoped would allow us to access a range of bicyclic compounds **2** (Scheme 1).

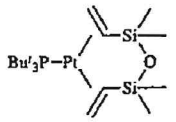


Scheme 1 R = Alkyl, aryl; X = O, $(CH_2)_n$

This approach, in which the silicon is attached directly to the diene unit, has been the subject of only two previous reports,[2] despite considerable interest in the area of silicon-tethered reactions.[3]

We thus required a convenient and flexible synthesis of a range of silylated butadienes **5** and **6** and hoped to access them *via* the silylated allylic alcohols **4** which are conveniently prepared by hydrosilylation of the prop-2-ynyl alcohols **3**.[4] These alcohols would then allow easy access to the required substrates *via* a variety of methods, for example *via* dehydration (**5**) or a Wittig reaction (**6**) (Scheme 2).

As a preliminary investigation we took a range of substrate alcohols **3a–e** and effected hydrosilylation using conditions previously described by Murphy *et al.*[4] utilising the readily prepared catalyst **7**.[5] As can be seen (Table 1) the reaction



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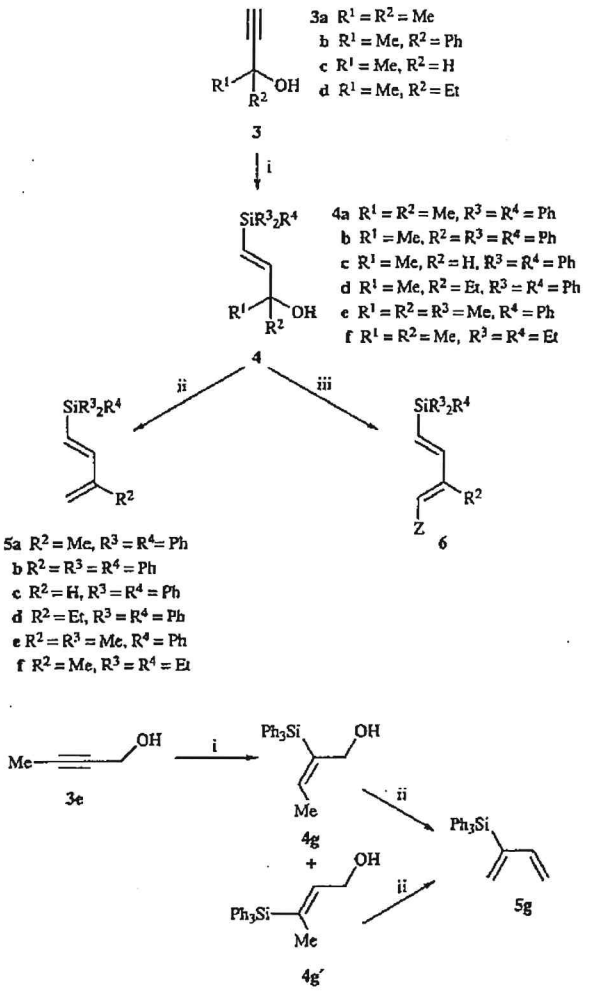
proceeded, to give the alcohols **4a–g**, with excellent regioselectivity and in good yield in most cases.

Treatment of these alcohols with camphorsulfonic acid (CSA) under azeotropic conditions in either benzene, toluene or xylene, led to the formation of the corresponding diene **5a–g** in acceptable yields (Table 1).

As is apparent, the best yields for the elimination step are found, unsurprisingly, with the tertiary alcoholic substrates (**4a**,**b**,**e** and **f**) and the elimination is effective for alkyl as well as aryl substituted silanes. The yield for the secondary alcohol (**4c**) is somewhat lower (49%) but still acceptable. However, when we



Scheme 2 i, $HSiR^3_2R^4$, [Pt]; ii, heat, $H^+/-H_2O$; iii, $R^1 = H$; (a) PCC, (b) $ZCHPPh_3$; Z = H, R, Ar, CN, COR, COOR

consider the eliminations from the primary alcohols (**4g** and **g'**) the yields are now somewhat diminished, but despite this the reaction is readily amenable to scaling up and is thus still of synthetic use; indeed yields are generally better when the reactions are performed on a medium scale (3–5 g). A final example, using the unsymmetrical alcohol **3d**, helps highlight the limitations of this method.

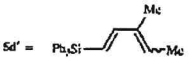
With this preliminary work in hand we hoped to assess the potential use of this methodology in the preparation of precursors for the silicon-tethered IMDA. Thus we prepared diphenyl(but-3-enyl)silane **8** from commercially available chlorodiphenylsilane by treatment with the Grignard of 4-bromobut-1-ene; this was then reacted under our standard conditions with **3a** to give the diene precursor **9** in 68% yield for the two steps. On heating **9** in toluene containing catalytic CSA the diene **10** was produced in 78% yield, which on further heating

† E-mail: chs027@bangor.ac.uk

Table 1

Alcohol 3	t/h[a]	Product 4 (% yield)	Conditions[b]	Product 5 (% yield)
3a	21	4a (80)	PhMe, 3 h, 2% CSA	5a (84)
3b	6.5	4b (83)	PhH, 4 h, 5% CSA	5b (52)
3c	4	4c (88)	$C_6H_4Me_2$, 2 h, 5% CSA	5c (49)
3d	24	4d (67)	PhMe, 2 h, 11% CSA	5d + 5d′ (1:2.4)[c] (total 69)
3a	3	4e (85)	PhMe, 2 h, 5% CSA	5e (66)
3a	4	4f (69)	PhMe, 1.5 h, 5% CSA	5f (54)
3e	5.5	4g (44) + 4g′ (50)	$C_6H_4Me_2$, 1.5 h, 19% CSA	5g (39)
			$C_6H_4Me_2$, 3 h, 17% CSA	5g′ (29)

[a] Silane (1 equiv.) and alcohol (1.4 equiv.) were heated under reflux in the presence of catalyst 7 for the stated times. [b] Alcohol 4 and camphorsulfonic acid (CSA) were heated in the solvent given with azeotropic removal of water, until TLC indicated the complete consumption of starting material. [c]

5d′ = 

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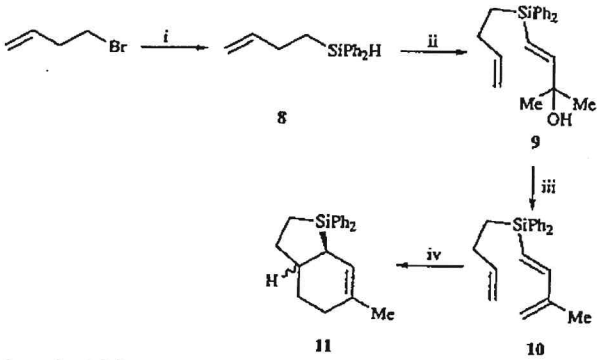
(xylene, sealed tube, 180–200 °C) for 40 h gave the cyclised products **11a** and **b** as an inseparable 5:2 mixture of isomers (90% conversion) (Scheme 3).



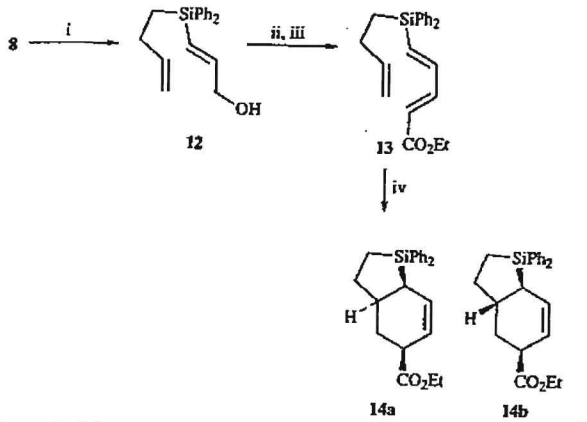
Scheme 3 i, Mg–Et_2O then $ClHSiPh_2$; ii, **3a**, catalytic **7**, THF reflux 3 h (68% for 2 steps); iii, heat, toluene, CSA (10% w/w) 2 h, 78%; iv, xylene 180–200 °C, sealed tube for 40 h (quantitative recovery, 90% conversion)

Similarly hydrosilylation of prop-2-ynyl alcohol using diphenyl(but-3-enyl)silane **8** gave the alcohol **12** in 77% yield. Oxidation of this intermediate and immediate reaction of the resultant aldehyde with ethoxycarbonylmethylenetriphenylphosphorane led to the formation of **13** in excellent overall yield. Heating of **13** in a sealed tube for 16 h (180–200 °C) led to the formation of a separable 1:1 mixture of the cyclised products **14a** and **b** (quantitative conversion, 53% isolated yield) (Scheme 4).

In conclusion, we have demonstrated a convenient and rapid method for the preparation of a range of potentially useful silylated dienes and have applied the method to an initial study of the intramolecular Diels–Alder reaction of such substrates. We are currently investigating the factors that affect the stereoselectivity of this IMDA reaction and its potential applications in synthesis.

Experimental

Column chromatography was carried out on Kieselgel (230–400 mesh) with the eluent specified in each case; all substances are



Scheme 4 i, Prop-2-ynyl alcohol, catalytic **7**, THF reflux 3 h (77%); ii, 2 equiv. PCC, DCM, RT, 3 h; iii, $EtO_2CCHPPh_3$, DCM, reflux (68% for 2 steps); iv, xylene 180–200 °C, sealed tube, 16 h (**14a**:**14b** 1:1, 53%)

oils unless otherwise stated. TLC was conducted on precoated Kieselgel 60 F_{254} (Art. 5554; Merck) glass plates. All reactions were conducted in oven-dried apparatus under a static atmosphere of argon. Light petroleum refers to the fraction boiling in the range 35–60 °C. Diethyl ether and THF were dried and distilled using standard methods; all other reagents are used as supplied. Chemical shifts are reported as δ values relative to tetramethylsilane as an internal standard; J values are given in Hz. ^1H and ^{13}C NMR spectra were recorded in deuteriochloroform on a Bruker AC250 spectrometer. IR Spectra were recorded as thin films (oils) or in KBr on a Perkin-Elmer 1600 series instrument. Mass spectra were recorded on a VG Masslab Model 12/253 spectrometer using CI (with ammonia as the reagent gas) or EI.

General procedure for hydrosilylation

The silane (1 equiv.) and the acetylenic alcohol **3** (1.4 equiv.) were dissolved in THF (5 ml per g of silane) and the catalyst **7** (5–10 mg per g of silane) added; the reaction mixture was then refluxed for the stated period (Table 1). The reaction was then cooled, evaporated and the crude product purified by flash chromatography (10–20% diethyl ether in light petroleum).

Spectral data for the alcohols 4a–g

3-Hydroxy-3-methyl-1-triphenylsilylbut-1-ene 4a. Mp 98–99 °C; δ_H 7.54–7.25 (15 H, m, ArH), 6.39 (1 H, d, J 18.7), 6.29 (1 H, d, J 18.7), 1.60 (1 H, br s, OH), 1.33 (6 H, s, 2 × CH_3); δ_C 159.09, 135.84, 129.59, 128.09, 127.91, 118.62, 72.47, 29.42; ν_{max}/cm^{-1} 3400 (OH), 3064, 2975 (CH), 1626 (C=C); *m/z* (CI) 344 [(M + NH_4 − H_2O)$^+$, 25%], 362 [(M + NH_4)$^+$, 2] {Found: 362.1940 [(M + NH_4)$^+$]. Calc. for $C_{25}H_{28}NOSi$: 362.1940}.

3-Hydroxy-3-phenyl-1-triphenylsilylbut-1-ene 4b. Oil; δ_H 7.6–7.23 (20 H, m, ArH), 6.59 (1 H, d, J 19.0), 6.52 (1 H, d, J 19.0), 2.10 (1 H, s, OH), 1.72 (3 H, s, CH_3); δ_C 157.39, 146.15, 136.04, 134.44, 129.69, 128.38, 128.00, 127.16, 125.37, 120.21, 75.98, 29.33; ν_{max}/cm^{-1} 3438 (OH), 3066, 2977 (CH), 1621 (C=C); *m/z* 406 (M$^+$, 5%), 424 [(M + NH_4)$^+$, 2] {Found: 424.2097 [(M + NH_4)$^+$]. Calc. for $C_{28}H_{30}NOSi$: 424.2097}.

3-Hydroxy-1-triphenylsilylbut-1-ene 4c. Mp 128–129 °C; δ_H 7.58–7.37 (15 H, m, ArH), 6.45 (1 H, dd, J 18.6, 1.1), 6.28 (1 H, dd, J 18.6, 4.4), 4.45 (1 H, m), 1.70 (1 H, br s, OH), 1.33 (1 H, d, J 6.5, Me); δ_C 155.34, 135.88, 134.27, 129.52, 127.83, 121.54, 70.30, 22.92; ν_{max}/cm^{-1} 3446 (OH), 3065, 2994 (CH), 1624 (C=C); *m/z* 330 (M$^+$, 10%), 348 [(M + NH_4)$^+$, 20] {Found: 348.1784 [(M + NH_4)$^+$]. Calc. for $C_{22}H_{26}NOSi$: 348.1784}.

3-Hydroxy-3-methyl-1-triphenylsilylpent-1-ene 4d. Oil; δ_H 7.56–7.29 (15 H, m, ArH), 6.40 (1 H, d, J 18.7), 6.18 (1 H, d, J 18.7), 1.58 (3 H, m, CH_2, OH), 1.28 (3 H, s), 0.87 (3 H, t, J 7.7); δ_C 158.19, 135.92, 134.57, 129.52, 127.86, 119.73, 74.80, 34.68, 27.40, 8.26; ν_{max}/cm^{-1} 3433 (OH), 3067, 2968 (CH), 1618 (C=C);

m/z (CI) 358 [(M − H_2O + NH_4)$^+$, 20%], 376 [(M + NH_4)$^+$, 3] {Found: 376.2097 [(M + NH_4)$^+$]. Calc. for $C_{20}H_{30}NOSi$: 376.2097}.

3-Hydroxy-3-methyl-1-phenyldimethylsilylbut-1-ene 4e. Oil; δ_H 7.54–7.23 (5 H, m, ArH), 6.23 (1 H, d, *J* 18.7), 5.93 (1 H, d, *J* 18.7), 1.52 (1 H, br s, OH), 1.27 (6 H, s, 2 × CH_3), 0.32 (6 H, s, 2 × CH_3); δ_C 155.06, 138.66, 137.77, 128.93, 127.74, 122.44, 72.05, 29.30, −2.57; ν_{max}/cm^{-1} 3342 (OH), 3068, 2972 (CH), 1616 (C=C); *m/z* 203 [(M + H − H_2O)$^+$, 45%], 220 [(M − H_2O + NH_4)$^+$, 100], 221 [(M + H)$^+$, 20], 238 [(M + NH_4)$^+$, 12] {Found: 238.1627 [(M + NH_4)$^+$]. Calc. for $C_{13}H_{24}NOSi$: 238.1627}.

3-Hydroxy-3-methyl-1-triethylsilylbut-1-ene 4f. Oil; δ_H 6.16 (1 H, d, *J* 18.7), 5.72 (1 H, d, *J* 18.7), 1.53 (1 H, br s, OH), 1.33 (6 H, s, 2 × CH_3), 0.93 (9 H, t, *J* 7.7, 3 × CH_3CH_2Si), 0.57 (6 H, q, *J* 7.7, 3 × CH_3CH_2Si); δ_C 154.76, 120.33, 72.07, 29.4, 7.27, 3.38; ν_{max}/cm^{-1} 3383 (OH), 2954 (CH), 1620 (C=C); *m/z* 183 [(M + H − H_2O)$^+$, 35%], 200 [(M − H_2O + NH_4)$^+$, 50] {Found: 200.1835 [(M − H_2O + NH_4)$^+$]. Calc. for $C_{11}H_{26}NSi$: 200.1835}.

1-Hydroxy-2-triphenylsilylbut-2-ene 4g. Mp 131–132 °C; δ_H 7.57–7.17 (15 H, m, ArH), 6.12 (1 H, q, *J* 7.0), 4.43 (2 H, s), 1.85 (3 H, d, *J* 7.0), 1.07 (1 H, br s, OH); δ_C 144.46, 136.78, 126.22, 134.55, 129.52, 127.93, 60.79, 15.30; ν_{max}/cm^{-1} 3054 (OH), 3049 (CH), 1608 (C=C); *m/z* 348 [(M + NH_4)$^+$, 20%] {Found: 348.1784 [(M + NH_4)$^+$]. Calc. for $C_{22}H_{26}NOSi$: 348.1784}.

1-Hydroxy-3-triphenylsilylbut-2-ene 4g′. Mp 135–136 °C; δ_H 7.57–7.12 (15 H, m, ArH), 6.01 (1 H, tq, *J* 1.0, 5.4), 4.33 (2 H, *J* 5.4), 1.84 (3 H, d, *J* 1.0), 1.33 (1 H, br s, OH); δ_C 145.02, 136.24, 133.71, 133.50, 129.55, 127.88, 60.14, 16.50; ν_{max}/cm^{-1} 3278 (OH), 3064 (CH), 1618 (C=C); *m/z* 330 (M$^+$, 8), 348 [(M + NH_4)$^+$, 15] {Found: 348.1784 [(M + NH_4)$^+$]. Calc. for $C_{22}H_{26}NOSi$: 348.1784}.

General procedure for dehydration

The alcohol **4** was dissolved in the required solvent (Table 1; 20 ml per gram of substrate) and CSA (50–200 mg per gram of substrate) was added. The reaction was then equipped with a Dean–Stark apparatus and heated under reflux (with gradual concentration of the reaction by removal of toluene) until TLC indicated complete consumption of starting material. After cooling to room temperature the reaction mixture was diluted with diethyl ether (*ca.* 30–50 ml), washed with saturated aqueous sodium hydrogen carbonate (2 × 30 ml), dried and evaporated. Column chromatography (0–2% diethyl ether in light petroleum) gave the dienes **5**.

Spectral data for the butadienes 5a–c and 5e–g

3-Methyl-1-triphenylsilylbuta-1,3-diene 5a. Mp 112–115 °C; δ_H 7.68–7.23 (15 H, m, ArH), 6.76 (1 H, d, *J* 18.8), 6.35 (1 H, d, *J* 18.8), 5.51 (1 H, br s), 5.16 (1 H, br s), 1.98 (3 H, s, CH_3); δ_C 151.58, 143.21, 135.90, 134.30, 129.45, 127.79, 122.56, 118.70, 17.98; ν_{max}/cm^{-1} 3065, 3000 (CH), 1603 (C=C); *m/z* 334 [(M + NH_4)$^+$, 20%], 327 [(M + H)$^+$, 15] {Found: 327.1569 [(M + H)$^+$]; C, 84.42; H, 6.93%. Calc. for $C_{23}H_{23}Si$: 327.1569; C, 84.61; H, 6.79%}.

3-Phenyl-1-triphenylsilylbuta-1,3-diene 5b. Mp (glass) 80–90 °C; δ_H 7.54–7.14 (20 H, m, ArH), 6.84 (1 H, d, *J* 18.7), 6.35 (1 H, d, *J* 18.7), 5.27 (2 H, br s, 2 × CH); δ_C 145.48, 141.95, 136.07, 135.98, 134.93, 134.60, 129.21, 128.81, 127.90, 127.45, 124.81, 120.13; ν_{max}/cm^{-1} 3018 (CH), 1598 (C=C); *m/z* 406 [(M + NH_4)$^+$, 32%], 389 [(M + H)$^+$, 30] {Found: 389.1726 [(M + H)$^+$]. Calc. for $C_{28}H_{25}Si$: 389.1726}.

1-Triphenylsilylbuta-1,3-diene 5c. Mp 107–109 °C; δ_H 7.56–7.25 (15 H, m, ArH), 6.67–6.29 (3 H, m), 5.19 (2 H, m); δ_C 149.64, 139.56, 135.98, 135.80, 134.43, 129.59, 127.91, 119.34; ν_{max}/cm^{-1} 3013 (CH), 1583, 1565 (C=C); *m/z* 330 [(M + NH_4)$^+$, 5%], 276 [(M + NH_4 − C_4H_6)$^+$, 80] {Found: 330.1678 [(M + NH_4)$^+$]. Calc. for $C_{22}H_{24}NSi$: 330.1678}.

3-Methyl-1-dimethylphenylsilylbuta-1,3-diene 5e. Oil; δ_H 7.51–7.29 (5 H, m, ArH), 6.64 (1 H, d, *J* 18.7), 5.91 (1 H, d, *J* 18.7), 5.07 (1 H, br s), 5.01 (1 H, br s), 1.84 (3 H, s, CH_3), 0.36 (6 H, s, 2 × $SiCH_3$); δ_C 2.48, 18.00, 117.75, 126.97, 127.82, 129.01, 133.92, 138.81, 143.44, 148.20; ν_{max}/cm^{-1} 3068, 2957 (CH), 1577 (C=C); *m/z* 202 (M$^+$, 20%); 187 [(M − CH_3)$^+$, 90] [Found: 202.1178 (M$^+$). Calc. for $C_{13}H_{18}Si$: 202.1178].

3-Methyl-1-triethylsilylbuta-1,3-diene 5f. Oil; δ_H 6.61 (1 H, d, *J* 19.0), 5.76 (1 H, d, *J* 19.0), 5.04 (1 H, br s), 4.91 (1 H, br s), 1.85 (3 H, s, CH_3), 0.96 (9 H, t, *J* 7.9, $SiCH_2CH_3$), 0.60 (6 H, q, *J* 7.9, $SiCH_2CH_3$); δ_C 147.70, 143.60, 125.62, 116.80, 17.87, 7.35, 3.48; ν_{max}/cm^{-1} 2953 (CH), 1572 (C=C); *m/z* 200 [(M + NH_4)$^+$, 70%], 183 [(M + H)$^+$, 90] {Found: 183.1569 [(M + H)$^+$]. Calc. for $C_{12}H_{23}Si$, 183.1569}.

2-Triphenylsilylbuta-1,3-diene 5g. Mp 70–77 °C; δ_H 7.60–7.26 (15 H, m, ArH), 6.67 (1 H, dd, *J* 18.0, 10.8), 6.15 (1 H, d, *J* 2.5), 5.47 (1 H, d, *J* 2.5), 5.06 (1 H, d, *J* 18.0), 5.02 (1 H, d, *J* 10.8); δ_C 144.42, 141.27, 136.26, 135.11, 134.10, 129.53, 127.85, 118.52; ν_{max}/cm^{-1} 3066 (CH), 1614 (C=C); *m/z* 330 [(M + NH_4)$^+$, 80%], 276 [(M + NH_4 − C_4H_6)$^+$, 100] {Found: 330.1678 [(M + NH_4)$^+$]. Calc. for $C_{22}H_{24}NOSi$: 330.1678}.

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