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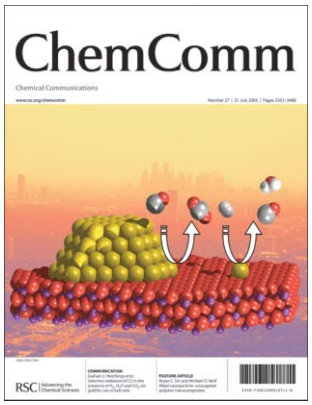

Cover
See Graham J. Hutchings *et al.*, page 3385.
The Au/Fe_2O_3 catalyst achieves target conversion and selectivity for the competitive oxidation of dilute CO in the presence of moist excess H_2 and CO_2.
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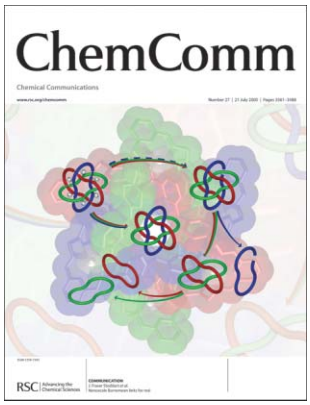

Inside cover
See J. Fraser Stoddart *et al.*, page 3394.
Fully demetallated molecular Borromean links are realised.
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CHEMICAL TECHNOLOGY

T25

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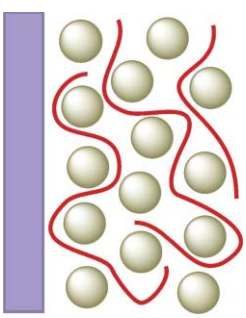
FEATURE ARTICLE

3375

Metal nanoparticle—conjugated polymer nanocomposites

Bryan C. Sih and Michael O. Wolf*

Nanocomposites in which metal nanoparticles are embedded in conjugated polymers are intriguing materials with interesting electronic and optical properties. This review highlights recent developments in the preparation and properties of these hybrid materials.



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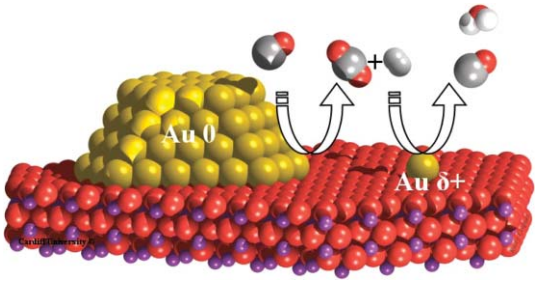
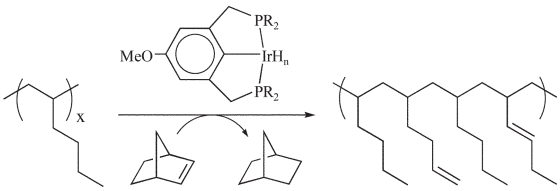
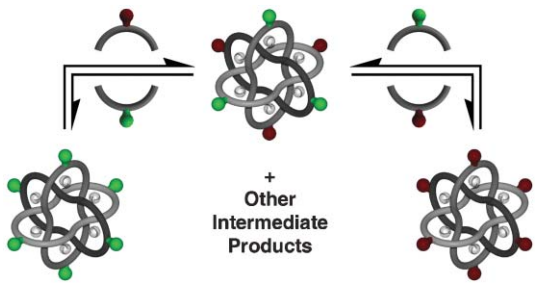
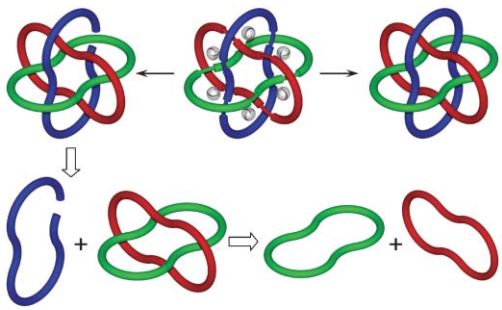
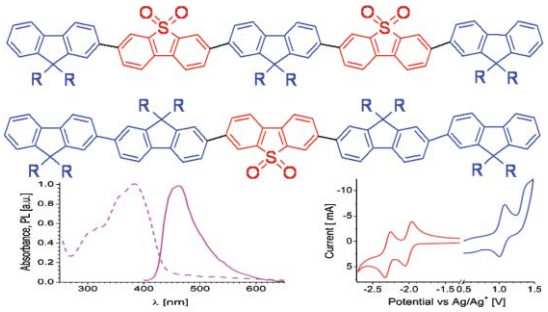






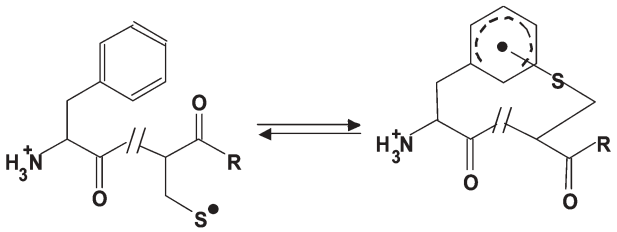




Dibenzothiophene-*S,S*-dioxide–fluorene co-oligomers. Stable, highly-efficient blue emitters with improved electron affinity

Irene I. Perepichka, Igor F. Perepichka,* Martin R. Bryce* and Lars-Olof Pålsson

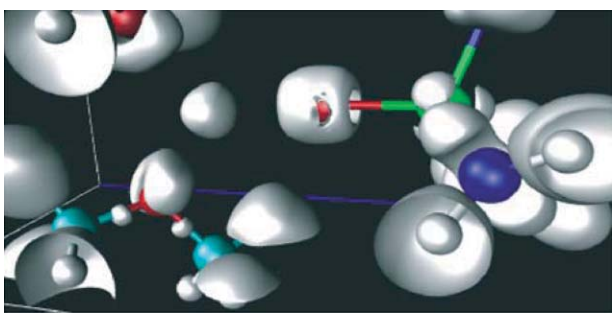
New hybrid dibenzothiophene-*S,S*-dioxide oligomers have been synthesised and shown be highly-efficient blue fluorophores which can be reversibly p- and n-doped.



Intramolecular addition of cysteine thiyl radicals to phenylalanine in peptides: formation of cyclohexadienyl type radicals

Thomas Nauser, Giulio Casi, Willem H. Koppenol and Christian Schöneich*

The addition of a cysteine thiyl radical to phenylalanine yields a substituted cyclohexadienyl radical. In the presence of oxygen or other oxidants, this reaction may represent a novel pathway to thioether cross-linked peptides and proteins.



Synthesis of a four-coordinate titanium(IV) oxoanion *via* deprotonation and decarbonylation of complexed formate

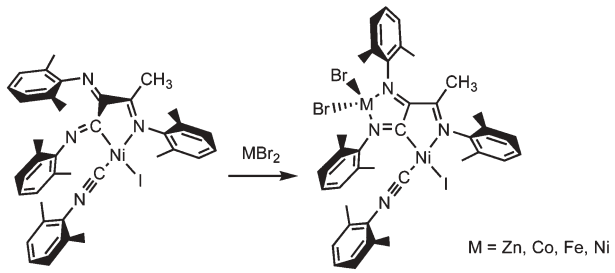
Arjun Mendiratta, Joshua S. Figueroa and Christopher C. Cummins*

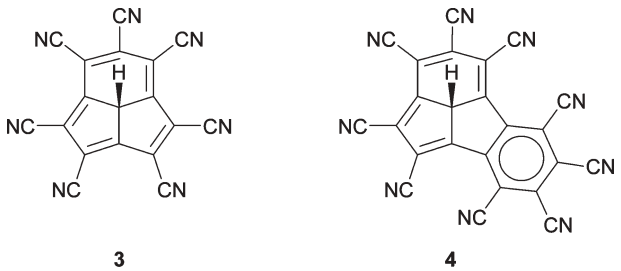
An oxoanion of titanium(IV) has been synthesized by deprotonation of bound formate followed by spontaneous decarbonylation. Quantum chemical calculations illuminate the nature of the Ti–O titanoxo bond.

Square planar bis(imino)pyridine iron halide and alkyl complexes

Marco W. Bouwkamp, Suzanne C. Bart, Eric J. Hawrelak, Ryan J. Trovitch, Emil Lobkovsky and Paul J. Chirik*

Synthesis and characterization of square planar iron chloride and methyl complexes with bis(imino)pyridine ligands are described; treatment of the corresponding ferrous dihalide with two equivalents of $LiCH_2SiMe_3$ afforded the bis(alkyl) complex.





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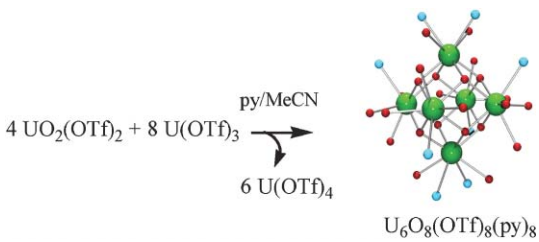

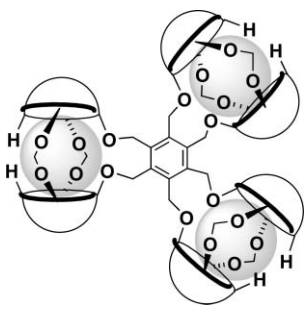

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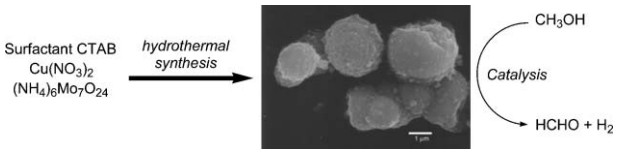
Surfactant-promoted novel reductive synthesis of supported metallic Cu nanoclusters and their catalytic performances for selective dehydrogenation of methanol

Rajaram Bal, Mizuki Tada and Yasuhiro Iwasawa*

We have found a surfactant-promoted novel reductive synthesis of metallic Cu nanoclusters supported on metal oxides under hydrothermal synthesis conditions, which are active for the selective dehydrogenation of methanol to formaldehyde and hydrogen.



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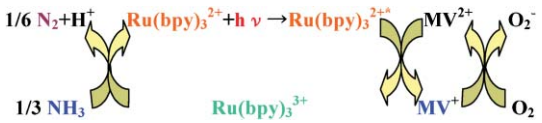
Visible light decomposition of ammonia to dinitrogen by a new visible light photocatalytic system composed of sensitizer ($Ru(bpy)_3$2+), electron mediator (methylviologen) and electron acceptor (dioxygen)

Masao Kaneko,* Naoto Katakura, Chihiro Harada, Yoshihito Takei and Mikio Hoshino

Visible light decomposition of aqueous NH_3 to N_2 was achieved by using a new photocatalytic system based on a molecular photoelectron relay.



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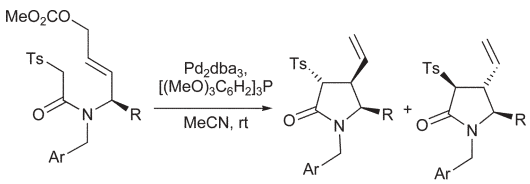
Stereoselective γ-lactam synthesis *via* palladium-catalysed intramolecular allylation

Donald Craig,* Christopher J. T. Hyland and Simon E. Ward

Amino acid-derived allylic carbonates possessing α-tosylacetamide moieties undergo ambient-temperature, stereoselective Pd(0)-catalysed cyclisation in good yield and with high 3,4-*syn* stereoselectivity.



Ar = 4-methylphenyl
R = Me
i-Pr
CH_2*i*-Pr
n-Bu
4-$MeOC_6H_4CH_2$

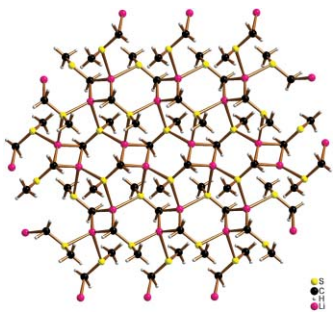
67:33 to 90:10 d.r.
78 to 90% yield

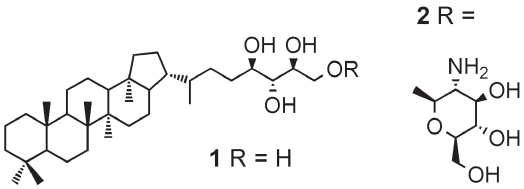
3442

Solvent-free methylthiomethyllithium $[LiCH_2SMe]_\infty$: solid state structure and thermal decomposition

Kai Ruth, Robert E. Dinnebier,* Stefan W. Tönnes, Edith Alig, Ingeborg Sänger, Hans-Wolfram Lerner and Matthias Wagner*

The solid state structure of solvent-free $[LiCH_2SMe]_\infty$ was determined by high-resolution X-ray powder diffraction. The compound violently explodes upon heating to $T = 160 \pm 5$ °C under an argon atmosphere.

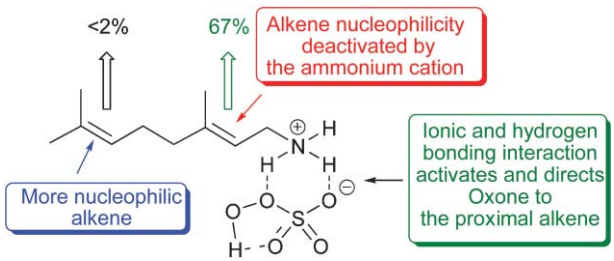




Concise syntheses of bacteriohopanetetrol and its glucosamine derivative

Weidong Pan, Yongmin Zhang, Guangyi Liang, Stéphane P. Vincent* and Pierre Sinaÿ*

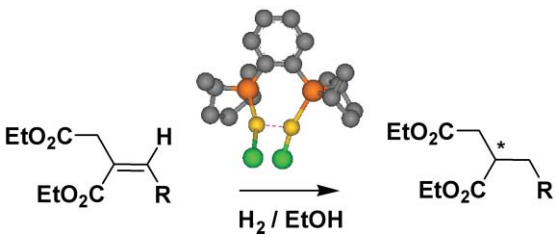
Short syntheses of bacteriohopanetetrol **1** and its glucosamine derivative **2** are described. The efficiency of these syntheses relies on the coupling of a ribitol derivative to the hopane skeleton *via* its activation through the adequate organocopper derivative.



Highly regioselective and diastereoselective epoxidation of allylic amines with Oxone

Varinder K. Aggarwal* and Guang Yu Fang

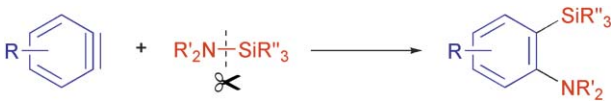
Allylic amines (as their protonated ammonium salts) can be epoxidised with high *syn* diastereoselectivity and regioselectivity at the proximal alkene in substrates with several double bonds using Oxone.



Enantioselective hydrogenation of alkenes and imines by a gold catalyst

Camino González-Arellano, Avelino Corma,* Marta Iglesias and Felix Sánchez

A new neutral dimeric gold(I) complex bearing the [(*R*,*R*)-Me-Duphos] ligand has been synthesized. The gold complex catalyzes the asymmetric hydrogenation of alkenes and imines under mild reaction conditions.



Aminosilylation of arynes with aminosilanes: synthesis of 2-silylaniline derivatives

Hiroto Yoshida,* Takashi Minabe, Joji Ohshita and Atsutaka Kunai*

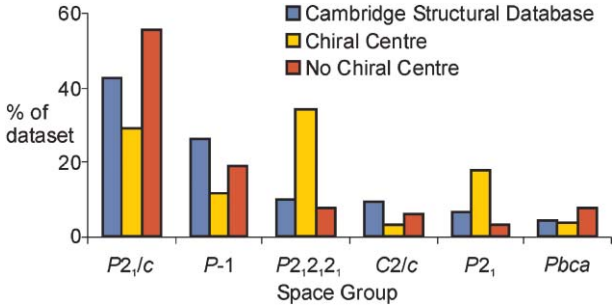
A variety of 2-silylaniline derivatives were synthesized straightforwardly *via* a novel aminosilylation reaction, where the nitrogen–silicon σ-bond of aminosilanes added across the carbon–carbon triple bond of arynes.

3457

Achiral molecules in non-centrosymmetric space groups

Elna Pidcock*

A database survey of organic molecules indicates molecular flexibility plays a role in determining whether an achiral molecule crystallises displaying a centrosymmetric or non-centrosymmetric space group.

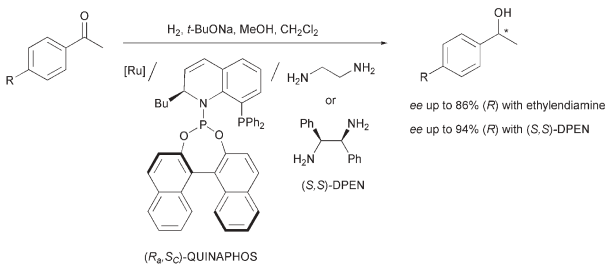


3460

Ruthenium-catalysed asymmetric hydrogenation of ketones using QUINAPHOS as the ligand

Simon Burk, Giancarlo Franciò and Walter Leitner*

Highly enantioselective ruthenium-catalysed hydrogenation of aromatic ketones is achieved with (R_a,S_C)-QUINAPHOS in the presence of achiral and chiral diamines as co-catalysts.



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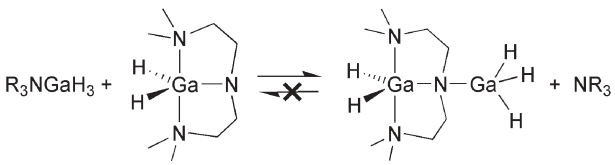
Mono- and digallane complexes of a tridentate amido-diamine ligand

Bing Luo, Benjamin E. Kucera and Wayne L. Gladfelter*

The synthesis and characterization of $H_2GaN(CH_2CH_2NMe_2)_2$ (**1**) and $H_2GaN(CH_2CH_2NMe_2)_2GaH_3$ (**2**) are reported. **1** is a potentially useful precursor to gallium-containing films and **2** exhibits an unusual structural feature.



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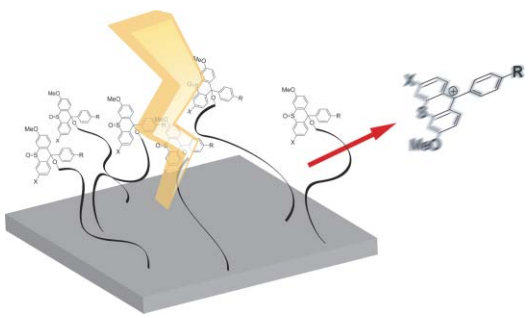
S(*O*)-Pixyl protecting group as efficient mass-tag

Pablo L. Bernad, Jr, Safraz Khan, Vladimir A. Korshun, Edwin M. Southern and Mikhail S. Shchepinov*

S(*O*)-pixyls and novelty trityl systems with adjustable stability: used as mass-tags and protecting groups.



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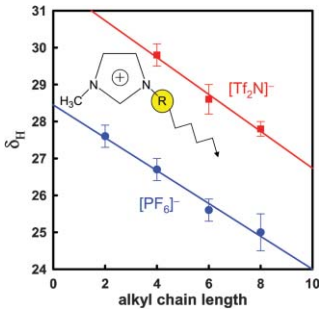
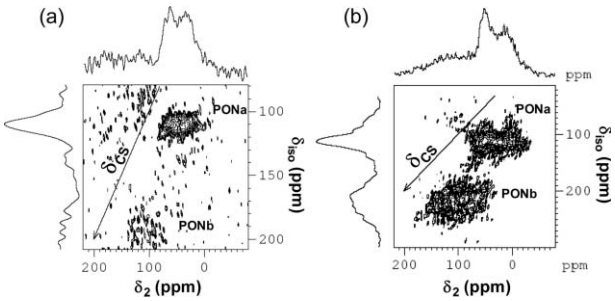


The Hildebrand solubility parameters, cohesive energy densities and internal energies of 1-alkyl-3-methylimidazolium-based room temperature ionic liquids

Sang Hyun Lee and Sun Bok Lee*

The Hildebrand solubility parameters, cohesive energy densities and internal energies of 1-alkyl-3-methylimidazolium-based room temperature ionic liquids were determined by the intrinsic viscosity method and their dependencies on the length of the alkyl group analyzed.

3472

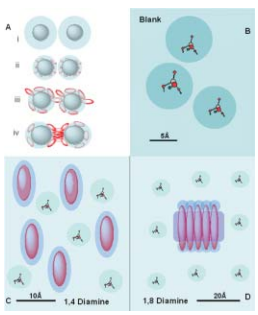


A very sensitive high-resolution NMR method for quadrupolar nuclei: SPAM-DQF-STMAS

Jean-Paul Amoureux,* Alexandrine Flambard, Laurent Delevoye and Lionel Montagne

The SPAM-STMAS method allows observing in 17 hours (b) ^{17}O spectra of $30Nb_2O_5$–$70NaPO_3$ that are hardly observable in 48 hours (a) with SPAM-3QMAS.

3475

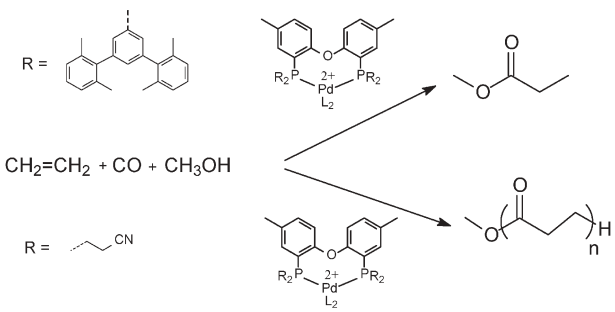


Putrescine homologues control silica morphogenesis by electrostatic interactions and the hydrophobic effect

David Belton, Siddharth V. Patwardhan and Carole C. Perry*

A systematic model study on the role(s) of putrescine homologues on silicification is presented and it is proposed that electrostatic forces between additive and silicic acid, and the hydrophobic behaviour of the additives are both important in silicification.

3478



New diphosphine ligands based on diphenyl ether for the Pd-catalyzed CO/ethene copolymerization

Maria Caporali, Christian Müller, Bastiaan B. P. Staal, Duncan M. Tooke, Anthony L. Spek and Piet W. N. M. van Leeuwen*

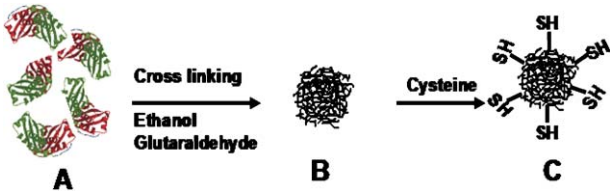
The catalytic activity and selectivity of palladium(II) complexes of new, flexible bidentate ligands in the CO/ethene copolymerization reaction have been found to change considerably with the steric properties of the ligands.

3481

Enzyme nanoparticles-based electronic biosensor

Guodong Liu, Yuehe Lin,* Veronika Ostatná and Joseph Wang*

A simple and effective method to prepare an enzyme electronic biosensor by immobilizing enzyme nanoparticles directly onto the gold electrode surface is described. Immobilized enzyme nanoparticles retain their redox and electrocatalytic activities and were used to develop reagentless biosensors for H_2O_2 detection without promoters and mediators.



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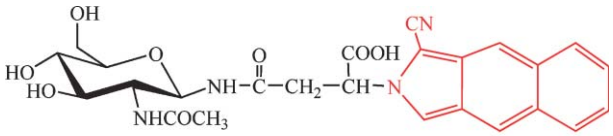
Resolution of *N*-linked oligosaccharides in glycoproteins based upon transglycosylation reaction by CE-TOF-MS

Jun Zhe Min, Toshimasa Toyo'oka,* Masaru Kato and Takeshi Fukushima

The resolution of asparagine-type oligosaccharides in glycoproteins was carried out by combination of the transglycosylation reaction using Endo-M and CE-TOF-MS.



NDA-Asn-GlcNAc

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