

Curriculum Vitae Roberto Ballini

Roberto Ballini received his Laurea Degree in Chemistry from the University of Camerino-Italy. After experience at the ENI-ANIC (Petrolchemical Industry) in Ravenna, he began his academic career in 1975 as a **Research fellow** at the University of Camerino. Then he became **Assistant Professor** in Organic Chemistry (**1978**), was promoted to **Associate Professor (1984**, Organic Chemistry), and then was promoted to **Full Professor** of Organic Chemistry in 2000.

Has been **visiting Professor** to the University of Nijmegen (Nederland), Badajoz (Spain), Sevilla (Spain), and Dallas (Texas).

Roberto Ballini has been **Dean of Faculty of Sciences (2007-2009)**, **Dean of the School of Sciences and Technology** (ex Faculty, 2010-2014) of the University of Camerino and **President of the Italian Organic Chemistry Society (2014-2016)**

Actually, Roberto Ballini is a **Honorary Professor** at the University of Camerino.

Attività Didattica a Contratto dal 2016 (data inizio quiescenza):

- 1) Ha tenuto il corso di **Chimica Organica I** per il Corso di Laurea in Chimica Organica dall'aa 2016-17 all'aa 2019-20.
- 2) Ha tenuto il Corso di **Chimica Organica** per il Corso di Laurea in Tecnologie Innovative per i Beni Culturali dall'aa 2017-17 fino all'aa 2019-20.
- 3) Ha tenuto il Corso di **Prodotti Naturali Eterociclici** nell'aa 2020-21.

Roberto Ballini has been:

Memberships, Committees, Boards of:

- 1) Italian representative on the IUPAC-subcommittee of the Green Chemistry;
- 2) Member of Board of the Green Chemistry Interdivisional Group of the Italian Chemical Society;
- 3) Member of Board of the Chemical Organic Division of Italian Chemical Society;
- 4) Member of the Editorial Board of Letters in Organic Chemistry Journal;
- 5) Member of the Editorial Board of Arkivoc Journal.
- 6) Member of the examination board of the following International PhD:
 - European PhD in Chemistry, University of Badajoz (Spain), 2001;
 - European PhD in Chemistry, University of Siviglia (Spain), 2003, 2006, 2011;
 - European PhD in Chemistry, University of Badajoz (Spain), 2008;
 - International PhD in Chemistry, University of Karachi (Pakistan), 2004 and 2005.
 - International PhD in Chemistry, University of Kwait City, 2009.
 - European PhD in Chemistry, Université Paris Sud, 2012;

Seminars, Conferences and Schools.

Prof. Ballini has been teacher in the following Specialistic Schools in the field of Organic Synthesis and of Green Chemistry:

- 1) Scuola di Chimica Organica A. Corbella di Gargnano, Giugno 1995;
- 2) Summer School on Green Chemistry 9th Edition, Novembre 2002, Lecce.
- 3) IUPAC Postgraduate Summer School on Green Chemistry, Venezia 7-13 July 2018

Prof Ballini held the following seminars:

- 1) Dipartimento Farmaco-Chimico, Università di Bari (Aprile 1991);
- 2) Dipartimento di Chimica Organica "Ugo Schiff", Università di Firenze (Aprile 1991);
- 3) Istituto di Chimica Farmaceutica, Università di Urbino (Maggio 1991);
- 4) Dipartimento di Chimica, Università Cà Foscari-Venezia (Giugno 1995);
- 5) Dipartimento Farmaco-Chimico, Università di Messina (Maggio 1997);
- 6) Facoltà di Farmacia, Università di Chieti (Febbraio 1999);
- 7) Dipartimento di Chimica delle Sostanze Naturali, Università "Federico II" di Napoli (Maggio 2004);
- 8) Department of Organic Chemistry, University of Nijmegen-Olanda (July 1995);
- 9) Department of Organic Chemistry, University of Nijmegen-Olanda (August 1996);
- 10) Universidad De Extremadura-Badajoz (Spain) (June 2001);
- 11) Istituto di Chimica Farmaceutica, Università di Urbino (Maggio 2002).
- 12) Department of Chemistry, Texas Christian University (March 2004);
- 13) Department of Chemistry, University Texas Dallas (March 2004);
- 14) Department of Chemistry, Suothen Methodist University-Texas (March 2004);
- 15) University of North Texas, (March 2004);
- 16) University of Sevilla, Spain (July 2005);
- 17) University of Atene (October 2006);
- 18) University of Kuwait City (May 2009);
- 19) Università di Arcavacata di Rende (September 2010);
- 20) Istituto Superior Tecnico de Lisboa (June 2010).

Prof Ballini gave the following invited lectures:

- 1) XIX Congresso Nazionale della Ricerca e Tecnologia, Riccione (Giugno 1996);
- 2) 2nd Italian-Spanish Symposium on Organic Chemistry (ISSOC-2), Lecce (June 1998);
- 3) Henry Feuer Symposium, Purdue University-Lafayette-Indiana (November 2001);
- 4) XIX Reunion Bienal de Quimica Organica, Carmona-Spain (June 2002);
- 5) 9th International Workshop on Combustion and Propulsion: Novel Energetic Materials Application, Lerici-La Spezia (September 2003);
- 6) 9th International Symposium on Natural Product Chemistry, Karachi (January 2004);
- 7) XXIX Convegno Nazionale della Divisione della Chimica Organica, Potenza (Settembre 2004).
- 8) 15th International Symposium on Fine Chemistry and Functional Polymers (FCFP-XV), Shanghai (October 2005).

- 9) National Seminars on Green Chemistry and Natural Products, New Dehli (November 2007).
- 10) 5th Eurasian Meeting on Heterocyclic Chemistry, Kwait City (March 2008).
- 11) 1th Convegno Nazionale "Chimica Verde, Chimica Sicura", Pavia, 20-22 Ottobre 2009;
- 12) 1th Cina-Italy Bilateral Symposium on Organic Chemistry, Shangai, 26-30 April 2010.
- 13) 3rd International Conference for Asian Young Chemistry 2010, Penang-Malaysia, 23-25 June 2010;
- 14) 8th Spanish-Italian Symposium on Organic Chemistry, Padova, 3-6 July 2010.
- 15) 3rd International Conference on Heterocyclic Chemistry, Jaipur-India, 10-13 December, 2011.

Prof Ballini has been member of the organizer board of the following Congress and Symposiums:

- 1) CISCI 90, Convegno Nazionale della SCI, S. Benedetto del Tronto 1990;
- 2) XXV Congresso Nazionale della Divisione di Chimica Organica, Folgaria-Trento (Settembre 2002);
- 3) VII Joint Meeting on Heterocyclic Chemistry: The Millenium Meeting, Folgaria-Trento (May 2000);
- 4) 1th International School of Organometallic Chemistry, Co-Chairman, Camerino (September 1997);
- 5) 2th International School of Organometallic Chemistry, Co-Chairman, Camerino (September 1999);
- 6) 3th International School of Organometallic Chemistry, Co-Chairman, Camerino (September 2001);
- 7) 4th International School of Organometallic Chemistry, Co-Chairman, Camerino (September 2003);
- 8) 5th International School of Organometallic Chemistry, Co-Chairman, Camerino (September 2005);
- 9) 6th International School of Organometallic Chemistry, Co-Chairman, Camerino (September 2007);
- 10) Member of Comitato Organizzatore della Scuola di Chimica Organica A. Corbella di Gargnano (2005-2007);
- 11) Chairman del XXXIII Convegno Nazionale della Divisione di Chimica Organica (Settembre 2010).

Scientific Activity:

The research interest of Prof. Ballini is mainly dedicated to Organic Synthesis, with particular attention to the field of eco-sustainable synthetic processes (Green Chemistry). To reach the goal of environmental protection, the right approach is to focus attention on primary prevention (minimizing or avoiding waste formation) rather than on secondary remediation (mainly consisting in waste treatment).

In this context the Ballini's research group has developed a variety of collaboration with other Universities and Research centers (National: Rome, Bologna, Venezia, Urbino, Parma, Perugia, Chieti, and International: Dallas-Texas, Badajoz-Spain, Sevilla-Spain, Nijmegen-Netherland, etc.).

Of particular interest is the Chemistry of aliphatic nitro compound that, thanks to their highly chemical versatility, can be easily employed for eco-friendly procedures for new generations of C,C single and double bond, for the cleavage of C,C bond, as key building blocks in the synthesis of important "fine chemical", natural products featuring enhanced biological activity, pharmaceuticals, high density energetic materials, etc.

Other special fields of extensive interest also concern:

- (i) Studies of new heterogeneous catalysis, and new use of solid catalysis, applied to fine chemicals and pharmaceuticals production;

- (ii) Exploitation of Solvent-free processes;
- (iii) One-pot processes for the synthesis of “fine chemical”;
- (iv) Use of alternative, eco-friendly solvents in organic synthesis;
- (v) Nuove Procedure per la sintesi di sistemi Eterociclici

The scientific activities have been evidenced by:

- 1) More than **270 Publications (H-FACTOR > 45)** on the main scientific Journals;
- 2) More than **20 Reviews**, several of these are on the field of the Green Chemistry (heterogeneous catalyst, one-pot processes, employment of eco-friendly solvents, solvent-free processes);
- 3) Editor of two Green Chemistry Books (*of Green Chemistry Series*) by Royal Chemical Society (RSC), Cambridge: (i) “*Eco-Friendly Processes and Procedures for the Synthesis of Fine Chemicals*” **2009**, and (ii) “*Green Synthetic Processes and Procedures*” **2019**.
- 4) Author of the Book: *Nitroalkanes: Synthesis, Reactivity and Applications*. By Wiley-VCH (Weinheim-Germany), **2021**.
- 5) Authors of more than 4 Book-Chapters in the field of Organic Synthesis.

ELENCO PUBBLICAZIONI

1. D. Giardinà, **R. Ballini**, M. Ferappi
Polymethyl Derivatives of Furo[3,4-c]pyran-4-one, Furo[3,4-c]pyridin-4-one and Pyrrolo[3,4-c]pyran-4-one.
J. Heterocyclic Chem. **1978**, *15*, 993.
2. A. Carotti, F. Campagna, **R. Ballini**
An Easy, High Yield Conversion of Aldoximes to Nitriles.
Synthesis **1979**, 56.
3. D. Giardinà, **R. Ballini**, G. Cingolani, B. Pietroni, A. Carotti, G. Casini
PMR Characterization of Diastereomeric Forms of Acyclic Compounds Bearing Two Equivalent Chiral Atoms in 1,5-Positions.
Tetrahedron **1979**, *35*, 249.
4. D. Giardinà, **R. Ballini**, G. Cingolani, C. Melchiorre, B. Pietroni, A. Carotti, G. Casini
PMR Characterization of Diastereomeric Forms of 6- and 7-Membered Cyclic Compounds Bearing Two Equivalent Chiral Atoms.
Tetrahedron **1980**, *36*, 3565.
5. M. Pignini, **R. Ballini**, F. Gualtieri, L. Brasili

Molecular Requirements of the Active Sites of the Cholinergic Receptors.
Il Farmaco **1980**, 3, 167.

6. **R. Ballini**

A Convenient Synthesis of 2-Nitrocycloheptanone.
Chem. & Ind. (London) **1983**, 329.

7. **R. Ballini**

Reaction of Methoxycarbonylhydrazone with Hydrogen Sulfide: A New and Facile Synthesis of Tetrasulfides.
Synthesis **1982**, 834.

8. F. Gasparri, L. Caglioti, D. Misiti, G. Palmieri, **R. Ballini**

Oxidation of *N*-Alkyl-*N'*-tosylhydrazines with $\text{Hg}(\text{OAc})_2$. A New Synthesis of Ethers.
Tetrahedron **1982**, 38, 3609.

9. G. Rosini, **R. Ballini**, V. Zanotti

Denitration of α -Nitro Ketones by Treatment of their Tosylhydrazones with Lithium Aluminium Hydride: New Application of the Henry Reaction.
Synthesis **1983**, 137.

10. G. Rosini, **R. Ballini**

Regiospecific C- α Deuteration of Alkyl Ketones: a New Efficient Indirect Procedure.
Synthesis **1983**, 228.

11. G. Rosini, **R. Ballini**

Pyridinium Chlorochromate: a Mild and Efficient Oxidant for 2-Nitroalcohols.
Synthesis **1983**, 543.

12. G. Rosini, **R. Ballini**, V. Zanotti

Cycloaddition of Dichloroketene with Functionalized Cycloalkenes. Synthesis of Bicyclo[4.2.0]octanone-3-yl Derivatives and 3,4-Dicarbomethoxy-1-methylbicyclo[4.2.0]octan-7-one.
Tetrahedron **1983**, 39, 1085.

13. **R. Ballini**

Oxidation of *N*-17 β -Androstan-3-yl-*N'*-tosylhydrazine with $\text{CuCl}_2 \cdot 2\text{H}_2\text{O}$: a Facile Synthesis of Androstane 3,17-Diol-3-alkyl.
Chem. & Ind. (London) **1983**, 317.

14. G. Rosini, M. Soverini, **R. Ballini**

Azines from Erythro-1,2-diaryl-2-(2-tosylhydrazino)-ethan-1-ol Derivatives by Acid Treatment.

Synthesis **1983**, 909.

15.G. Rosini, **R. Ballini**, P. Sorrenti

Synthesis of 2-Nitroalkanols on Alumina Surfaces without Solvent: A Simple, Mild, Convenient Method.

Synthesis **1983**, 1014.

16.G. Rosini, **R. Ballini**, P. Sorrenti

A New Route to 1,4-Diketones and its Application to (Z)-Jasmone and Dihydrojasmone Synthesis.

Tetrahedron **1983**, 39, 4127.

17.**R. Ballini**, A. Carotti

A Simple and Mild Procedure for the Preparation of Bile Acid Methyl Esters.

Synthetic Comm. **1983**, 13, 1197.

18.**R. Ballini**, M. Petrini

A Simple Synthesis of Methyl 7-Oxoheptanoate.

Synthetic Comm. **1984**, 14, 827.

19.G. Rosini, **R. Ballini**, P. Sorrenti, M. Petrini

Oxidation of 2-Nitrocycloalkanols under Phase Transfer Conditions: A Mild and Efficient Synthesis of Linear α -Nitro Ketones.

Synthesis **1984**, 607.

20.**R. Ballini**, P. Sorrenti

Synthesis of 2-Nitrocyclooctanone.

Org. Prep. Proc. Int. **1984**, 16, 289.

21.G. Rosini, **R. Ballini**, M. Petrini, P. Sorrenti

2-(2-Nitroethyl)-1,3-dioxolane as Reagent for 3-Oxopropyl Anions Synthon: a New Route to Jasmonoid and Prostaglandin Intermediates.

Tetrahedron **1984**, 40, 3809.

22.G. Rosini, **R. Ballini**, M. Petrini

Methyl 8-Nitrooctanoate as Reagent for 7-Methoxy-carbonylheptyl Anion Synthon: a New Synthesis of Methyl 9-Oxodecanoate and Methyl 9-Oxo-12-tridecanoate.

Synthesis **1985**, 269.

23.G. Rosini, **R. Ballini**, M. Petrini, P. Sorrenti

A Convenient Synthesis of 1-(2-Furyl)-2-nitroalk-1-enes on Alumina Surface, without Solvent.

Synthesis **1985**, 515.

24.G. Rosini, E. Marotta, M. Petrini, **R. Ballini**

Stereoselective Total Synthesis of Racemic Grandisol. An Improved Convenient Procedure.

Tetrahedron **1985**, 41, 4633.

25.M. Petrini, **R. Ballini**, G. Rosini, E. Marotta

Furan Ring as Masked 3-Acylacrilate Moiety. Practical Synthesis of Racemic (*E*)-4,4-(Ethylenedioxy)-7-hydroxy-2-octenoic Acid, the C-8 Subunit of Pyrenophorin.

Tetrahedron **1986**, 42, 151.

26.G. Rosini, **R. Ballini**, M. Petrini

A Convenient Synthesis of (*Z*)-5-Undecen-2-one: A Pheromone from the Pedal Gland of the Bontebok (*Damaliscus dorcas dorcas*).

Synthesis **1986**, 46.

27.G. Rosini, E. Marotta, **R. Ballini**, M. Petrini

Conjugate Addition of Nitro-Derivatives to α,β -Unsaturated Carbonyl Compounds on Basic Alumina.

Synthesis **1986**, 237.

28.**R. Ballini**, M. Petrini, G. Rosini

(*Z*)-1-Nitro-3-hexene as (*Z*)-3-Hexen-1-yl d^1 -Reagent: Synthesis of (*Z*)-5-Octen-2-one and (*Z*)-1,8-Undecadien-5-one.

Synthesis **1986**, 849.

29.G. Rosini, **R. Ballini**, M. Petrini, E. Marotta

Nitromethane as d^1, d^1 Multiple Coupling Reagent for the Carbonyl Dianion Synthon. Practical Synthesis of Chalcogran.

Angew. Chem. Int. Ed., Engl. **1986**, 25, 941.

30.**R. Ballini**, M. Petrini

Facile and Inexpensive Synthesis of 4-Oxoalkanoic Acids from Primary Nitroalkanes and Acrolein.

Synthesis **1986**, 1024.

31.G. Rosini, M. Geier, E. Marotta, M. Petrini, **R. Ballini**

Stereoselective Total Synthesis of Racemic Grandisol via 3-Oximino-1,4,4-trimethylbicyclo[3.2.0]heptane. An Improved Practical Procedure.

Tetrahedron **1986**, 42, 6027.

32. **R. Ballini**, M. Petrini
Ring Cleavage of Cyclic 2-Nitro Ketones by KF Catalyst: A General Synthesis of ω -Nitroacids and ω -Nitroesters.
Synthetic Commun. **1986**, *16*, 1781.
33. **R. Ballini**, M. Petrini, E. Marotta
An Improved, Simple Synthesis of 3-Methyl-2-(4-methylphenyl)cyclopenten-2-one: An Important Intermediate in Cuparene Synthesis.
Synthetic Commun. **1987**, *17*, 543.
34. M. Petrini, **R. Ballini**, G. Rosini
Reduction of Aliphatic and Aromatic Nitro Compounds with Sodium Borohydride in Tetrahydrofuran Using 10% Palladium-Carbon as Catalyst.
Synthesis **1987**, 713.
35. **R. Ballini**, M. Petrini, G. Rosini
Amberlyst-A21 as New and Efficient Surface Catalyst for the Conjugate Addition of Nitroalkanes to Methyl Acrylate: An Improved Synthesis of Methyl 4-Nitro- and 4-Oxo-alkanoate.
Synthesis **1987**, 711.
36. **R. Ballini**, M. Petrini, E. Marcantoni, G. Rosini
Utilization of Basic Alumina in One-Pot Synthesis of 1,4-Diketones, 1,4,7-Triketones, and Dihydrojasmane by Conjugate Addition of Nitroalkanes to Enones.
Synthesis **1988**, 231.
37. M. Petrini, **R. Ballini**, E. Marcantoni, G. Rosini
Amberlyst 15: a Practical, Mild, and Selective Catalyst for Methyl Esterification of Carboxylic Acids.
Synthetic Commun. **1988**, *18*, 847.
38. **R. Ballini**, M. Petrini
Amberlyst 15, a Superior, Mild, and Selective Catalyst for Carbonyl Regeneration from Nitrogenous Derivatives.
J. Chem. Soc., Perkin Trans 1 **1988**, 2563.
39. **R. Ballini**, E. Marcantoni, M. Petrini, G. Rosini
A New Oxidative Cleavage of 2-Nitrocycloalkanones by Hydrogen Peroxide: An Important, Efficient Method for Dicarboxylic Acid or Keto Acid Synthesis.
Synthesis **1988**, 915.
40. **R. Ballini**, G. Bartoli, M. Bosco, R. Dalpozzo, E. Marcantoni

Alkylation Orientation Rules in Conjugate Addition of Grignard Reagents to Nitropyrrole and Nitrothiophene Systems.

Tetrahedron **1988**, *44*, 6435.

41. G. Rosini, **R. Ballini**

Functionalized Nitroalkanes as Useful Reagents for Alkyl Anion Synthon.

Synthesis **1988**, 833 (**REVIEW 1**).

42. **R. Ballini**, M. Petrini, E. Marotta

(Z)-7-Nitro-3-heptene as Central Intermediate for the Synthesis of Jasmone, Methyl Jasmonate, and γ -Jasmolactone.

Synthetic Commun. **1989**, *19*, 575.

43. G. Rosini, **R. Ballini**, E. Marotta

Functionalized Nitroalkanes in Synthesis of 1,6-Dioxaspiro[4.5]decane Components of *Paravespula vulgaris* Pheromone.

Tetrahedron **1989**, *45*, 593.

44. **R. Ballini**, M. Petrini

Oxidative Conversion of Aliphatic Nitrocompounds to Carbonyls Using Sodium Chloride.

Tetrahedron Lett. **1989**, *30*, 5329.

45. **R. Ballini**, E. Marcantoni, M. Petrini

A New General Synthesis of Sulphones from Alkyl or Aryl Halides and *p*-Toluenesulfonylhydrazine.

Tetrahedron **1989**, *45*, 6791.

46. **R. Ballini**, M. Petrini

A New Procedure for Dethioacetalization via Equilibrium Exchange with Aqueous Acetone, Paraformaldehyde and Amberlyst 15 as Acidic Catalyst.

Synthesis **1990**, 336.

47. **R. Ballini**, M. Petrini, G. Rosini

A Tandem Denitration-Deoxygenation of α -Nitro Ketones via (*p*-Tolylsulfonyl)hydrazones with Lithium Aluminium Hydride: a Practical Synthesis of (Z)-9-Tricosene, the Sex Pheromone of the Housefly (*Musca domestica*).

J. Org. Chem. **1990**, *55*, 5159.

48. **R. Ballini**, M. Petrini, G. Rosini

New and Efficient Synthesis of ω -Nitroalcohols and Spiroketal by Chemio- and Regioselective Reductive Cleavage of 2-Nitrocycloalkanones.

Tetrahedron **1990**, *46*, 7531.

49. G. Rosini, **R. Ballini**, M. Petrini, E. Marotta, P. Righi
Recent Progress in the Synthesis and Reactivity of Nitro Ketones.
Org. Prep. Proc. Int. **1990**, 22, 707 (**REVIEW 2**).

50. **R. Ballini**, E. Marcantoni, M. Petrini
Enantioselective Synthesis of the Lactone Moiety of the Mevinic Acids Using *D*-Xylose as a Chiral Precursor.
J. Chem. Soc., Perkin Trans 1 **1991**, 490.

51. **R. Ballini**
New and Convenient Synthesis of (*Z*)-Heneicos-6-en-11-one, the Douglas Fir Tussock Moth (*Orgia pseudotsugata*) Sex Pheromone, and (*Z*)-Non-6-en-2-one, the Immediate Precursor for the Synthesis of Brevicomins, the Sex Attractant of the Western Pine Beetle *Dentroctonus brevicomins*.
J. Chem. Soc., Perkin Trans 1 **1991**, 1419.

52. **R. Ballini**, E. Marcantoni, M. Petrini
An Improved and Simple Synthesis of Methyl or Ethyl 7-Oxoheptanoate and 7-Acetoxyheptanal.
Synthetic Commun. **1991**, 21, 1075.

53. **R. Ballini**, G. Bartoli, R. Castagnani, E. Marcantoni, M. Petrini
Direct α^1 Alkylation of 2-Nitro Ketones Dianions.
Synlett **1992**, 64.

54. **R. Ballini**, E. Marcantoni, M. Petrini
A Nitron Approach to the Enantioselective Total Synthesis of (-) Anisomycin.
J. Org. Chem. **1992**, 57, 1316.

55. **R. Ballini**, E. Marcantoni, M. Petrini
 ω -Nitroalcohols as Precursors of Aldehydes ω -Functionalized: A New Synthesis of 7-Acetoxyheptanal, 7-(2-Tetrahydropyranyloxy)heptanal, and 8-(2-Tetrahydropyranyloxy)octanal.
Synthetic Commun. **1992**, 22, 641.

56. **R. Ballini**, R. Castagnani, M. Petrini
Chemoselective Synthesis of Functionalized Conjugated Nitroalkenes.
J. Org. Chem. **1992**, 57, 2160.

57. **R. Ballini**, M. Petrini, V. Polzonetti
Amberlyst A-21 as New and Efficient Surface Catalyst for the Cleavage of 2-Nitrocycloalkanones.

Synthesis **1992**, 355.

58.R. Ballini, E. Marcantoni, M. Petrini

Synthesis of Functionalized Nitroalkanes by Oxidation of Oximes with Urea-Hydrogen Peroxide Complex and Trifluoroacetic Anhydride.

Tetrahedron Lett. **1992**, 33, 4835.

59.R. Ballini, M. Petrini

Hydroxy-Functionalized Conjugated Nitroolefins as Precursors of Spiroketal. A New Synthesis of 1,7-Dioxaspiro[5.5]undecane and (*E*)-2-Methyl-1,7-dioxaspiro[6.6]dodecane.

J. Chem. Soc., Perkin Trans 1 **1992**, 3159.

60.R. Ballini, R. Castagnani, E. Marcantoni

A Novel, Chemoselective, One-Pot Procedure for a Simultaneous Denitration-Deoxygenation of 2-Nitroketones by TsNHNH₂-NaBH₄.

J. Chem. Soc., Perkin Trans 1 **1992**, 3161.

61.R. Ballini, G. Bartoli, R. Giovannini, E. Marcantoni, M. Petrini

Retro Claisen Cleavage of α -Nitrocycloalkanones Using Trimethylsilylmethylmagnesium Chloride (Peterson Reagent): Synthesis of Functionalized β -Keto-Trimethylsilanes.

Tetrahedron Lett. **1993**, 34, 3301.

62.R. Ballini

5-Nitro-1-pentene as a Precursor for the Synthesis of Allylrethron.

Synthesis **1993**, 687.

63.R. Ballini, G. Bartoli, P. V. Gariboldi, E. Marcantoni, M. Petrini

Reactivity of α -Nitro Ketones Toward Organometallic Reagents: Straightforward Synthesis of Tertiary β -Nitroalkanol.

J. Org. Chem. **1993**, 58, 3368.

64.O. Attanasi, R. Ballini, Z. Liao, S. Santeusano, F. Serra-Zanetti

Conjugated Azoalkenes. Part XVI. Reaction of Some Conjugated Azoalkenes with β -Nitrocarbonyl Derivatives.

Tetrahedron **1993**, 49, 7027.

65.R. Ballini, G. Bosica

A Two-Step Synthesis of 2-Methylheptadecane, the Sex Pheromone of the Tiger Moth, Using the Henry Reaction.

J. Chem. Res. (S) **1993**, 371.

66. **R. Ballini**, G. Bartoli

A New, Simple, and General Synthesis of 1,3-, 1,4-, and 1,5-Diketones from Functionalized Nitroalkanes.

Synthesis **1993**, 965.

67. **R. Ballini**, G. Bosica

A Novel Two-Step, Mild and Simple Synthesis of β -, γ -, and δ -Oxo Esters from ω -Nitro Esters.

J. Chem. Res. (S) **1993**, 435.

68. **R. Ballini**, G. Bosica, A. Uselli

A Simple, Efficient, Two-Step Synthesis of Symmetric 2,7-Dialkyl-1,6-dioxaspiro[4.4]nonanes.

J. Heterocyclic Chem. **1994**, 31, 259.

69. **R. Ballini**, G. Bosica

Chemoselective Conversion of Conjugated Nitroalkenes into Ketones by Sodium Borohydride-Hydrogen Peroxide: A New Synthesis of 4-Oxoalkanoic Acids, Dihydrojasmone and (+)-*exo*-Brevicomine.

Synthesis **1994**, 723.

70. **R. Ballini**, C. Palestini

A New, Highly Efficient Synthesis of Conjugated Nitrocycloalkenes.

Tetrahedron Lett. **1994**, 35, 5731.

71. **R. Ballini**, G. Bosica

A New Stereoselective Synthesis of (*E*)- α,β -Unsaturated- γ -dicarbonyl Compounds by the Henry Reaction.

J. Org. Chem. **1994**, 59, 5466.

72. **R. Ballini**, A. Rinaldi

Michael Addition of Nitroalkanes to Dimethyl Maleate with DBU. A New Direct Method for the Synthesis of Polyfunctionalized α,β -Unsaturated Esters.

Tetrahedron Lett. **1994**, 35, 9247.

73. **R. Ballini**, G. Bosica, R. Schaafstra

Nitro Ketones in Organic Synthesis: A New, Short Synthesis of Racemic *trans*-2-Methyl-1,7-dioxaspiro[5.5]undecane, *trans,trans*- and *trans-cis*-2,8-Dimethyl-1,7-dioxaspiro[5.5]undecane by the Henry Reaction.

Liebigs Ann. Chem. **1994**, 1235.

74. **R. Ballini**, G. Bosica

Synthesis of 1-Phenylheptane-1,5-dione, a New Natural Product Found in *Phellinus tremulae*.

J. Nat. Products **1994**, *57*, 1462.

75.R. Ballini, G. Giantomassi

A Novel Reactivity of α -Nitro Ketone Tosylhydrazones with DBU. Synthesis of α,β -Unsaturated Enone Tosylhydrazones.

Tetrahedron **1995**, *51*, 4173.

76.R. Ballini, G. Bosica

A Direct Method for the Synthesis of Polyfunctionalized Unsaturated Carbonyl Derivatives by Michael Addition of Nitroalkanes to Enediones with the Help of DBU.

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