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Personal Information

Name	:	Dr. Jasamrit Nayyar
Date of birth	:	07.08.68
Sex/ Marital status	:	Female / Married
Age	:	56 yrs
Nationality	:	Indian

Academic Qualification:

S.#.	Degree/Examination	Institution/ Board	Year	Remarks
1	Matric	CBSE	1986	-
2	10+2	PSEB	1988	-
3	B.Sc. (Hons)	PU	1991	-
4	M.Sc. (Hons)	PU	1993	National scholarship from 1991 to 1993
5	UGC/CSIR-NET	CSIR	1993	-
6	GATE	-	1994	-
7	Ph.D.	PU	1994-98	JRF & SRF Fellowship, CSIR
8	Research Associate	PU	1999-2003	RA Fellowship, CSIR
9	DST-Women Scientist SR/WOS-A/CS-67/2003	DST	2005-07	Project worth Rs.15,72,000/-

Previous & Present Position Held:

Joined as Assistant Professor at GGDSD College, Chandigarh in 2004.
Associate Professor & Head, Department of Chemistry, GGDSD College, Chandigarh.

Areas of Research Undertaken

Synthetic Organic Chemistry, Green Chemistry & Medicinal Chemistry.

List of Publications

International Journals	:	16
National Journals	:	10
Books	:	01
Book Chapters	:	02

Brief details of Doctoral research work :

My Ph.D. research work and fellowship was funded by Council of Scientific and Industrial Research, New Delhi and the thesis entitled, 'Synthesis of organic compounds via unconventional methodologies,' embodies the total synthesis of various naturally occurring compounds, mainly pheromones, some of them are mentioned as follows:

- 2,6-Dimethyl-2(*E*),6(*E*)-octadien-1,8-diol diisovalerate the sex pheromone component of the click beetle *Agriotes tauricus* and other *Agriotes* species.
- 2-Methylheptadecane is also found in at least nine species of the *Artidae* family.
- 5(*Z*)-Undecenoic acid, the sex pheromones of the female varies carpet beetle, *Anthrenus verbasci L*.
- 6-Oxo-1-nonanol, a pheromone of the male member of *Dacus* species, major component of *Bactrocera carambolae* and minor component of *Bactrocera halfordiae* (Tryon).
- 2-Tridecanone, an aggregation pheromone of *Drosophila hydei* (Diptera, Drosophilidae).
- 9-Oxo-2(*E*)-decenoic acid, the major component of the queen honeybee pheromone, *Apis mellifera.*
- 14-Methylpentadecan-3-one which is one of the plant part compositions of *Parthenium hysterophorous Linn* (compositae), a plant native to the W. Indies and central India.
- 3,7-Dimethyl-1-hydroxy-2(*E*),6(*E*)-dodecadien-11-one the component of the seaweed *Cystoseira crinite Bory* (Cystoseiraceae).
- Highly efficient, one-pot synthesis of 3,4-dihydro-4-phenylcoumarins and 4-phenylcoumarin using microwave irradiation in conjunction with montmorillonite clays.
- And using a similar methodology the selective iodination of benzylic alcohols to corresponding iodides was also brought about.

The key step in the synthesis of the naturally occurring compounds involved sonochemically induced addition of alky halides with α,β-unsaturated carbonyl compound, in the presence of Zn-Cu couple in ethanol-water system.

Brief details of Post-Doctoral research work :

The award of Research Associate ship was given by Council of Scientific and Industrial Research, New Delhi from October 1999 to June 2004. During this tenure I worked on the use of environmentally benign methodologies, such as ultrasound, microwave and solid–supported reactions for assisting chemical transformations. These non-toxic techniques were successfully used for the synthesis of various naturally occurring compounds.

Brief details of Major research project DST-(WOS) :

The funding for research work under the Women Scientist Scheme (WOS) SR/WOS-A/CS-67/2003 was given by Department of Science and Technology (DST), New Delhi. It was sanctioned in September 2003 and implemented in January 2005 till December 2007. The project titled, 'Green Organic Transformations utilizing aqueous media and non-conventional energy,' was given a grant of Rs.15,72,000/- for a tenure of 3 years. During the course of the project I made use of both microwaves and ultrasound as an alternate energy source for assisting chemical reactions. Indium metal in aqueous medium was also utilized for functional group transformation in the synthesis of a natural product. Solid supported reactions had been successfully carried out for the synthesis of a number of organic compounds.

The ionic liquid (IL) 1-butyl-3-methylimidazolium hydrogen sulphate (bmim)HSO_4 was prepared and used for protection of alcohol as THP ether derivatives.

Utilizing the previously mentioned methodologies we successfully synthesized some useful synthetic intermediates and organic compounds.

- Ionic liquid mediated protection of alcohols.
- A facile, solvent free route towards the preparation of (*E*)-α,β-unsaturated amides of piperine family using KF supported alumina.
- Quinolinium chloromate-Iodine as a regioselective mild and direct iodinating agent for (i) activated arenes and (ii) for preparation of dihalogenated compounds from corresponding alkenes.
- Synthesis of the metabolite fuscoatramide
- Synthesis of 5-styrylfuran-2-carboxylic acid methyl ester.

Scientific Research Achievements

New products/processes/methods/techniques developed

- Use of water (benign) as the reaction medium
- Use of solid-supported reaction to increase reaction selectivity and efficiency to provide re-useable reagents and also simplification of work up
- Use of microwave and ultrasonic energies as an alternate energy form, thus conserving conventional energy, providing reactions with enhanced yields and greatly reduced operational time.

Improvements in existing products/processes/methods/techniques

- Introduction of 'Green' aspects into the existing chemical reactions
- Use of solvent less conditions to minimized waste at source
- Use of catalytic amounts of reagents

SELF APPARIASAL

My biggest strength is my commitment towards my work which involves teaching, research as well as administration. I always put in the best efforts in the tasks assigned to me as a result of

which the outcomes have been very encouraging. Over the past couple of years, As HOD, I have been successful in handling the affairs of the Chemistry Department in SD College. While handling the administrative responsibilities, I ensured that the teaching and research were given equal importance.

I feel that Focus, passion, hard work and integrity has made me successful in all the projects / endeavors that I have undertaken.

All this has been possible with the support and encouragement from the Principal, Management & Colleagues of GGDSD College, Chandigarh.

LIST OF PUBLICATIONS

A. Books/Book Chapter:

1. Chapter No 2 entitled, 'Environmentally Benign & Banned Dye,' in the book, Green Fashion & Sustainability, 1st Edition ISBN 978-9356526167, Abhishek Publications, **2024**.

2. Chapter No 3 entitled, 'Hydrosphere,' in the book, Environment, Road Safety Education Violence against women and children, Drug Abuse, 4th Edition ISBN 978-93-82068-26-8, Mohindra Publishing House, **2020**.

3. Jasamrit Kaur, 'Introduction into the Use of sonochemistry towards the Total Syntheses of some naturally occurring organic compounds,' ISBN 978-81-932755-5-9, GyanKosh Publishers, **2017**.

B. Research Publications:

International Journals

1. S Khan, P Baligar, C Tandon, **J Nayyar**, S Tandon, 'Molecular heterogeneity in prostate cancer and the role of targeted therapy', *Life Sciences*, 336, **2024**, 122270.

2. G Singh, Mohit, A Singh, Priyanka,S Khurana, Mithun, K N Singh, **J Nayyar,** B Mohan, 'Benzimidazole-modified organosilane functionalized silica nanoparticles as a 'turn-off' fluorescent probe for highly selective Cu2+ ion detection: unravelling logic gate behavior and molecular docking studies', *New J. Chem*., 48, **2024**, 2028–2039

3. S Khan, M Suryavanshi, **J Kaur**, D Nayak, A Khurana, R K Manchanda, C Tandon, S Tandon, 'Stem cell therapy: A paradigm shift in breast cancer treatment', *World Journal of Stem Cells*, *26*, 13(7), **2021**, 841.

4. S Wadhawan, A Jain, **J Nayyar**, S K Mehta, 'Role of nanomaterials as adsorbents in heavy metal ion removal from waste water: A review', *Journal of Water Process Engineering*, *33***,** **2020**, 101038.

5. G Singh, Sanchita, A Singh, G Sharma, P Kalra, Pawan, J Singh, S Soni, **J Kaur**, 'New pyrimidine based organosilicon compounds as receptor for selective recognition of Cu^{2+} ions', *Journal of Molecular Structure, 1216***, 2020**, 128220.

6. **J Kaur**, 'Novel Approach towards the synthesis of poly heterocyclic compounds: Total synthesis of 12-oxa-6,10b-epoxy-4b,5,6,10b,11,12-hexahydrochrysene', *Asian Journal of Chemistry, 29*, **2017**, 2091.

7. **J Kaur**, 'Issues and challenges of higher education an Indian perspective: Impact and consequences,' *International Ed & Res J, 2*, **2016**, 52.

8. **J Kaur**, I Kaur, G Jindal, P Minhas, N Gupta & J Singh, 'Microwave and ultrasound assisted first synthesis of 12-hydroxyhentriacontane,' *J Chem Res, 39*, **2015**, 230.

9. J Singh, N Gupta, GL Kad & **J Kaur**, 'Efficient role of ionic liquid (bmim)HSO_4 as novel catalyst for monohydropyranylation of alcohols', *Synthetic commun. 7*, **2006**, 2893.

10. GL Kad, I Kaur, M Bhandari, J Singh & **J Kaur**, 'Functional group transformation of diols, cyclic ethers and lactones using aqueous hydrobromic acid and phase transfer catalyst under microwave irradiation', *Organic Process Research & Development, 7*, **2003**, 339.

11. J Singh, I Kaur, **J Kaur**, A Bhalla & GL Kad, 'Speedy and regioselective 1,2-reduction of conjugated α,β-unsaturated aldehydes and ketones using $NaBH_4/I_2$', *Synthetic Commun, 33*, **2003**, 191.

12. GL Kad, M Bhandari, **J Kaur**, R Rathee & J Singh, 'Solvent less preparation of oximes in the solid state via MWI', *Green Chem., 33*, **2001**, 275.

13. J Singh, M Sharma, M Chhibber, **J Kaur** & GL Kad, 'Chemoselective Oxidation of Benzylic Alcohols with Solid supported CrO_3/TBHP under MWI', *Synthetic Commun*, *30*, **2000**, 3941.

14. J Singh, **J Kaur**, S Nayyar & GL Kad, 'Highly efficient and single step synthesis of 4-phenylcoumarins and 3,4-dihydro-4-phenylcoumarins over montmorillonite K-10 clay, under MWI', *J. Chem. Res. (S)*, **1998**, 280.

15. GL Kad, **J Kaur**, P Bansal & J Singh, 'Selective iodination of benzylic alcohols with sodium iodide over KSF clay under MWI', *J. Chem. Res. (S)*, **1996**, 188.

16. IR Trehan, J Singh, A Arora, **J Kaur** & GL Kad, ; Synthesis via ultrasound: A convenient synthesis of 6-(4-toly)hept-1-ene and 6-(2-oxo-4-methylcyclohex-3-en-1-yl)hept-1-ene', *Collect Czech Chem. Comm., 59*, **1994**, 1889.

National Journals

1. **J Kaur**, I Kaur, Sonu, GL Kad & J Singh, 'Microwave and ultrasound assisted synthesis of 16-methyl-8(*Z*)-heptadecenoic and 16-methyl-6(*Z*)-heptadecenoic acids', *Ind. J. Chem., 47/B,* **2008**, 155.

2. J Singh, M Sharma, GL Kad, & **J Kaur,** ' Selective hydroboration/oxidation of double bond in the presence of triple bond by sodium acetoxyborohydride leading to the synthesis of acetylenic alcohols', *Ind. J. Chem., 46/B,* **2007**, 2053.

3. J Singh, M Bhandari, **J Kaur** & GL Kad, 'Quinolinium chlorochromate as an efficient reagent for oxidative cleavage of oximes via the use of MWI and pestle/mortar', *Ind. J. Chem., 42/B,* **2003**, 405.

4. S Nayyar, IR Trehan & **J Kaur**, 'C- vs O-alkylation of 1,3-dicarbonyl compounds using MWI', *Ind. J. Chem., 41B,* **2002**, 2342.

5. G.L Kad, **J Kaur**, S Nayyar, I Kaur & J Singh, 'A simple and facile microwave assisted synthesis of 9-oxo-2(*E*)-decenoic acid', *Ind. J. Chem.,* **2001**, 715.

6. J Singh, **J Kaur**, S Nayyar, M Bhandari & GL Kad, 'Ultrasound mediated synthesis of a few naturally occurring compounds', *Ind. J. Chem., 40B,* **2001**, 386.

7. GL Kad, **J Kaur**, S Nayyar & J Singh, 'A short and convenient synthesis of 3,7-dimethyl-1-hydroxy-2(*E*),6(*E*)-dodecadien-11-one and 2,6-dimethyl-2(*E*),6(*E*)-octadiene-1,8-diol dissovalerate', *Ind. J. Chem., 35B,* **1996**, 832.

8. GL Kad, IR Trehan, **J Kaur**, S Nayyar, A Arora & J Singh, 'Microwave assisted Frics rearrangement on K-10 montmorillonite', *Ind. J. Chem., 35B,* **1996**, 734.

9. IR Trehan, J Singh, A Arora, **J Kaur** & GL Kad, 'Synthesis via ultrasound: (+)-frontalin; (+)-endo- and (+)-exo-brevicomin under sonochemical aqueous conditions', *Ind. J. Chem., 34B,* **1995**, 396.

10. IR Trehan, J Singh, A Arora, **J Kaur** & GL Kad, 'Synthesis via ultrasound: A very short and convenient synthesis of (*Z*)- and (*E*)-heneicos-6-en-11-ones', *Ind. J. Chem., 33B,* **1994**, 468.