

Dr ARUN KUMAR PATRA

(Professor & Head)

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PROFILE:

- An academican and researcher with rich professional experience of over twenty eight years. Has a clear understanding of textile wet processing, with hands on experience in well known textile industries and academia.
- Large number of publications in journals of national and international repute. Also a reviewer for **SAGE Publications, UK** and **Elsevier Publications**. Contributed chapters to books by **Woodhead Publishing, UK** and **Nova Science Publishers Inc. New York, USA**
- Presented research papers in number of conferences including IFATCC International Congress in **Czech Republic** and World Textile Conference in **Egypt**. Also chaired technical sessions in international conferences and been panelist in Conclaves. Organized number of conferences with sizable presence of scientists from abroad.
- Successfully completed industrial consultancy project as well as **AICTE sponsored technical project** under Research Promotion Scheme.
- Enriched the department by procuring valuable instruments through funded projects.
- Got MOU signed for the earlier institute with **Novozymes** for financial and technical support to promote education and skill development. Also signed MOU for the present institute with **DyStar**.
- Given invitation lectures in technical institutions in India and abroad including **Technical University of Liberec and IIT Kanpur**.
- Guided many B.Tech and M.Tech projects. Presently a Ph.D student is registered.

CAREER HISTORY:

ACADEMIC -

UP Textile Technology Institute, Kanpur

- 3+ years

- Working as **Professor** in Textile Chemistry since December 2017
Additional responsibilities held/holding - **Dean (Academics)**, **Head of the Department** and **Chief Coordinator** for the Innovation and Incubation Centre (**IIC**) of the Institute

The Technological Institute of Textile & Sciences, Bhiwani

- 19+ years

- Worked as **Associate Professor** (formerly A.P./Reader) in Textile Chemistry since August 2005. Responsibilities included Heading the Textile Chemistry department, teaching B.Tech & M.Tech students, guiding B.Tech & M.Tech projects, managing training and placement of students, In-charge of Textile chemical testing, Faculty Advisor-ISTE Students Chapter, an interdisciplinary forum. Also entrusted responsibility of Wardenship of Boys' hostel for two years and Head - Grievance Redressal Committee.
- Worked as **Lecturer** in Textile Chemistry from August 2001 to July 2005 and May 1996 to June 1999. Responsibilities included teaching B.Tech & M.Tech students, guiding B.Tech & M.Tech projects and systems consultancy for textile and non-textile production units.

- **INDUSTRIAL -**

Maral Overseas Ltd. (LNJ Bhilwara group) Indore, M.P

- 2 years

- Worked as **Manager (Processing)** from July 1999 to June 2001
- Overall responsibility of R&D lab and production support for export processing

Indo Tex (Overseas), Faridabad (Haryana)

- 1 year

- Worked as **R&D Officer** from April 1995 to April 1996
- In-charge of Processing laboratory, lab-bulk correlation and new developments

Mafatlal Fine Mills, Navsari (Gujarat)

- 2 years

Worked as **Junior Assistant** with responsibility of Export quality dyeing production in shifts. Period of service : June 1991 – Aug 1993

EDUCATION:

<u>Degree</u>	<u>Institute/University</u>	<u>Year</u>	<u>Division</u>
Ph.D (Textile Tech)	National Institute of Technology, Jalandhar/India	2011	-
M.Tech (Textile Chem.)	TIT, Bhiwani/ India	1995	1st class
B. Text (Textile Chem.)	Textile Institute, Ichalkaranji/India	1991	1 st class (with Distinction)

OTHER PROFESSIONAL CREDENTIALS :

Awards

Awarded Fellow of the Society of Dyers and Colourists (**FSDC**), UK

Membership of professional bodies

- Member – i) Society of Dyers and Colourists, UK
ii) Board of Studies, Textile discipline, AK Technical University, Lucknow
iii) Bureau of Indian Standards Sectional Committees for -
Chemical Methods of Tests (TXD 05)
Textile Specialty Chemicals & Dyestuffs (TXD 07)
iv) Board of Studies in Textile Engg., State Technical University, Punjab
(2015-2017)

Life member – i) The Indian Society for Technical Education (ISTE)

ii) The Textile Association (India)

Editorial Board Member – Journal of Textile and Fashion Technology

Publications 55 [List attached]

No. of M. Tech thesis guided 14

Review work

Reviewer for -
Textile Research Journal (**SAGE Publications, UK**)
Journal of Cleaner Production (**Elsevier Publication**)
Biomedical Research Int. (**Hindawi Publishing, China**)
Industrial Crops and Products (**Elsevier Publication**)
Fibres and polymers (**Korean Fiber Society / Springer**)
Indian Journal of Natural Products and Resources (**CSIR**)
Cellulose (**Springer**)
Indian Journal of Fibre and Textile Research (**CSIR**)

Books/Chapters authored

i) Chapter captioned “**Reactive dyeing of textiles: practices & developments**” in the book DYEING: PROCESSES, TECHNIQUES AND APPLICATIONS – **Nova Science Publishers, Inc.**

New York, USA (2013)

ii) Chapter titled “**Novel varieties of Denim**” in the book DENIM: MANUFACTURE, FINISHING AND APPLICATIONS – **Woodhead Publishing, UK (2015)**

iii) Chapter titled “**Linen and its wet processing**” for the book FIBRE PLANTS: BIOLOGY, BIOTECHNOLOGY AND APPLICATIONS – **Springer International, Switzerland (2016)**

iv) Chapter titled “**Dry processes for chemical processing of textiles**” for the book SUSTAINABILITY IN TEXTILE CHEMICAL PROCESSING – **Woodhead Publishing, India (in press)**

Projects

Completed -

Consultancy project – “*Analysis of high broken filament and low mechanical properties of viscose rayon*”

Research project – AICTE sponsored project, “*Studies on Soybean fibre blended with Jute and Ramie & their environment friendly chemical processing*”

In progress/ sanctioned -

Research project – Ministry of Textiles under National Technical Textiles Mission, “*Engineering fibres for Fog harvesting and Interfacial Solar water purification*” as Co-PI along with Department of Mechanical engineering, IIT Kanpur

Areas of Teaching / Research interest

Textile coloration, Functional finishes, Biotechnology applications in textile processing, Restricted substances

PERSONAL DETAILS:

Date of Birth: 5th July 1968

Nationality: Indian

Languages known: English, Indian languages (Hindi, Oriya, Telugu, Marathi, Gujarati)

Countries visited: **Czech Republic, Germany, Egypt and UAE**

a) List of Publications

- 1) An environmental management technology for the processing of American aloe fibres using xylano-pectinolytic enzymes – Amanjot Kaur, Libin Mathew Varghese, Bindu Battan, **Arun Kumar Patra**, Rishi Pal Mandhan, Ritu Mahajan – Environmental Science and Pollution Research (Springer) <http://doi.org/10.1007/s11356-021-12915-9>, February 2021
- 2) Thermal comfort properties of Soybean, Soybean & Polyester and Soybean & Wool blended plain woven fabric dyed with 1:2 metal complex dyes – Ashish Bhardwaj, **Arun Kumar Patra**, Ajit Kumar Pattanayak – Journal of the Textile Association [Peer Reviewed], Vol.81, No.5, Jan-Feb 2021 (p. 274-279)
- 3) Environmental pollution reducing strategy for scouring of undegummed sisal fibers using xylanase and pectinase enzymes – Avtar Singh, Libin Mathew Varghese, Bindu Battan, **Arun Kumar Patra**, R P Mandhan & Ritu Mahajan – Bioprocess & Biosystems Engineering (Springer), 2021 (p.607-615)
- 4) Bio-degumming of banana fibers using eco-friendly crude xylano-pectinolytic enzymes – Amanjot Kaur, Libin Mathew Varghese, Bindu Battan, **Arun Kumar Patra**, Rishi Pal Mandhan, Ritu Mahajan – Preparatory Biochemistry & Biotechnology (Taylor & Francis), USA- Vol.50, No.5, 2020 (p. 521-528)
- 5) Eco-friendly scouring of ramie fibres using xylano-pectinolytic enzymes for textile purpose – Avtar Singh, Libin Mathew Varghese, Bindu Battan, **Arun Kumar Patra**, Rishi Pal Mandhan, Ritu Mahajan – Environmental Science and Pollution Research (Springer Berlin Heidelberg, Germany) December 2019
- 6) Coated textiles: practices and developments – **A K Patra** –Woodhead Publishing India Ltd., New Delhi, 2019 (p. 27-36)
- 7) A sustainable and green process for scouring of cotton fabrics using xylano-pectinolytic synergism: switching from noxious chemicals to eco-friendly catalysts -Avtar Singh, Amanjot Kaur, **A K Patra**, Ritu Mahajan – 3 Biotech (Springer-Verlag GmbH Germany, part of Springer Nature) March 2018
- 8) Enzyme washing of indigo and sulphur dyed denim – **A K Patra**, Amit Madhu & Neeraj Bala -Fashion and Textiles (Springer publication) – January 2018
- 9) Culture of enzyme for application on linen – **A.K.Patra** –44th Textile Research Symposium, IIT Delhi, 14 -16 Dec 2016
- 10) Comparative study of dyeing performance of soybean fibre and wool – **A K Patra** & Astha – Fibres and Textiles (SLOVAKIA) - Vol 23, Sept 2016 [ISSN 1335 – 0617] (p. 164-170)
- 11) Electrochemical bleaching of cotton – Dipankar Das, **A K Patra**, Rahul Jakhar, Shyam Sunder – Indian Journal of Fibre & Textile Research (CSIR Publication)- Vol.41, No.2, 2016 (p.217-220)
- 12) Cost-effective scouring of flax fibres using cellulase-free xylano-pectinolytic synergism from a bacterial isolate – Amanjot Kaur, Avtar Singh, **Arun Kumar Patra**, Ritu Mahajan – Journal of Cleaner Production (Elsevier Publication), Vol. 131, 2016 (p.107-111)
- 13) Comparative study of dyeing performance of banana and cotton fibres with improved reactive dyes – **A K Patra** & L N Meena – International Conference on Redefining Textiles: Cutting Edge` Technology of the Future (RTCT -2016), 8-10 April, NIT Jalandhar [ISBN: 978-93-5254-980-1]
- 14) Xylano-pectinolytic synergism from a bacterial isolate for ecofriendly processing of jute fabric – Avtar Singh, Amanjot Kaur, **Arun Kumar Patra**, Ritu Mahajan – Journal of Cleaner Production (Elsevier Publication), Vol. 124, 2016 (p.120-125)
- 15) KMnO₄ pretreatment of linen – Amit Madhu & **A K Patra** – The Journal of the Textile Institute (UK), Vol.105, No.5, 2014 (p. 520-527)
- 16) Studies on anchoring of β -cyclodextrin on cotton in wet processing operations – **A K Patra** and Saurabh Garg – Proceedings of International Conference on Emerging Trends

- in Traditional and Technical Textiles(ICETT 2014), 11th -12th April 2014, Department of Textile Technology, National Institute of Technology, Jalandhar [ISBN: 978-93-5156-700-4]
- 17) Banana fibre in textiles – **A K Patra** & L N Meena – Asian Dyer, Vol.10, No.6, Dec 2013-Jan 2014 (p.55-59)
 - 18) Wet pretreatment of linen by enzyme and alternative bleaching techniques – **A.K.Patra**, S.S.Mahish & J N Chakraborty – Indian Journal of Fibre & Textile Research- Vol.38, No.2, 2013 (p.150-155)
 - 19) Bioscouring of jute fabric by cellulase-free alkalo-thermostable xylanase from *Bacillus pumilus* ASH – Journal of Molecular Catalysis B: Enzymatic (Elsevier Publication)- G.Garg, S S Dhiman, R Gautam, R Mahajan, **A K Patra** & J Sharma - January 2013 (p.43-48)
 - 20) Functional properties of Bamboo/polyester blended knitted apparel fabrics – S.S.Mahish, **A.K.Patra** & Rashmi Thakur – Indian Journal of Fibre & Textile Research, Vol.37, No.3, 2012 (p.231-237)
 - 21) Electrochemical dyeing of vat dyes – D.Das, **A.K.Patra** & A.Vashistha, Textile Asia (CHINA), Vol.43, No.7, August 2012 (p.29-31)
 - 22) Alternative wet pretreatments for Ramie fabric and their evaluation - **A.K.Patra** & Amit Madhu – 4th RMUTP International Conference: Textiles & Fashion, Bangkok, Thailand-3rd-4th July 2012
 - 23) Enzymatic scouring of linen with pectinase and xylanase- **A.K.Patra** & J N. Chakraborty, SMARTEX Research Journal, Proceedings of SMARTEX 2011 World Textile Conference, Nov 22-24, 2011, Department of Specific Education, Kafrelsheikh University, Egypt
 - 24) Improvement in physical properties of jute fibre by enzymatic treatment with cellulose-free xylanase and pectinase— S.S.Dhiman, G.Garg, R.Mahajan, **A.K.Patra** & J.Sharma – Proceedings of Conference on Multidisciplinary Approach in Frontier Areas of Environmental Science and Engineering- MAFAESE 2011 (March 4-5, 2011), G J University of Science & Technology, Hisar (p.90-99)
 - 25) Green textiles -the technology options – **A.K.Patra**, Proceedings of the 39th Textile Research Symposium, IIT Delhi, 16th - 18th Dec 2010 (p.308-316)
 - 26) Studies on enzymatic pretreatment of linen- **A K Patra**, Amit Madhu & J N Chakraborty , Indian Journal of Fibre & Textile Research, Vol.35, No.4, 2010 (p.337-341)
 - 27) Low temperature peroxide bleaching of flax - **A.K.Patra** & J.N.Chakraborty, Textile Asia (CHINA), Vol.40, No.9, Sept 2009 (p19-21)
 - 28) Linen – Perspective and chemical pretreatment - **A K Patra** & J N Chakraborty, Asian Textile Journal, Vol.18, No.1, 2009 (p.67-72)
 - 29) Microencapsulation – technique and applications – **A.K.Patra** & S.Dahiya, Man-made Textiles in India, Vol.52, No.7, July 2009 (p.223-232)
 - 30) Low temperature peroxide bleaching of linen – **A.K.Patra** & B.Misra - Melliland International (GERMANY)- Vol.14, No.5, 2008 (p.316-318)
 - 31) Enzymes – concept, applications and evaluation – **A.K.Patra**- 64th All India Textile Conference held on 20th & 21st Dec 2008 at Bhilwara
 - 32) Non-metameric colour prediction using math-model and artificial neural network – A.Khandual, **A.K.Patra**, L.Jajpura, R.P.Jamdagni - 64th All India Textile Conference held on 20th & 21st Dec 2008 at Bhilwara
 - 33) Studies on preparatory processing of linen- **A.K.Patra** & J.N. Chakraborty – International Conference on Futuristic trends in Textiles – held at NIT Jalandhar from 10th – 12th Dec 2007.
 - 34) Intelligent textiles: an environment responsive approach – **A.K.Patra** & A. Mukhopadhyay – Technical Textiles (GERMANY)- Nov 2007, (E 256- 258)
 - 35) Intelligent textiles: an environment responsive approach – **A.K.Patra** & A. Mukhopadhyay – (Detailed version) -Online link- www.technicaltextiles-dfv.com/TextileTechnology

- 36) Studies on pigment dyeing of cotton by exhaust method – **A.K.Patra**, S.Bhaumik & Harmandeep Kaur- Indian Journal of Fibre & Textile Research- Vol.31, No.3, Sept 2006 (p.450-459)
- 37) Studies on bio-pretreatment of cotton- **A.K.Patra** & Arun Arora, Textile Trends, Vol. 49, No.3, May 2006 (p..37-40)
- 38) Ultrasound and its utility in wet processing – **A.K.Patra** & M. Das- Melliamd International (GERMANY)- Vol.12, No.1, March 2006 (p.60-64)
- 39) Digital printing – trends and techniques — **A.K.Patra** – Colourage Annual 2005 (p.161-167)
- 40) Studies on some non benzidine direct dyes—K.Bhattacharya & **A.K.Patra** – Colourage-Vol.52, No3, Mar 2005 (p.49-54)
- 41) Development and processing of lyocell— R.B. Chavan & **A.K.Patra** - Indian Journal of Fibre & Textile Research- Vol. 29, No.4, Dec 2004 (p.483-492)
- 42) Cotton crosslinks — **A.K.Patra**, R.Arora, S.Arora & H.Nigam - Textile Asia (CHINA)- Vol.35, No.6, June 2004 (p.28-31)
- 43) Enzymatic scouring of cotton and its compatibility with bleaching—**A.K.Patra**, G.Agarwal & S.Garg – Indian Textile Journal -Vol.114, No.7, April 2004 (p.25-27)
- 44) Enzymes for wet-processing pretreatments —A.K.Patra-- Textile Asia (CHINA)- Vol.34, No.9, Sept 2003 (p.46-51)
- 45) Azo dyes and the German ban—**A.K.Patra**—Man-made Textiles in India-Vol.46, No.9, Sept 2003 (p.355-360)
- 46) Performance studies of some natural dyes on cotton—**A.K.Patra**, Aditi Sareen & Deepti Vohra-- Man-made Textiles in India-Vol.45, No.8, Aug 2002 (p.319-323)
- 47) One-step dyeing of polyester/viscose rayon blend—**A.K.Patra** & N.S.Gahlot—Colourage-Vol.49, No.6, June 2002 (p.21-26)
- 48) Formaldehyde-free finishing of cotton using Polycarboxylic acids—**A.K.Patra**-- Man-made Textiles in India- Vol.42, No.1, Jan 1999 (p.22-26)
- 49) ISO 9000 – the quality system—**A.K.Patra**—Textile Trends-Vol.41, No.6, Sept 1998 (p.21-23)
- 50) Applications of enzymes—**A.K.Patra** & D.P.Chattopadhyay—Textile Asia (CHINA)- Vol.29, No.8, Aug 1998 (p.46-48)
- 51) Processing of Knits: Practices & developments—**A.K.Patra** & D.P. Chattopadhyay— Indian Textile Journal -Vol.108, No.6, March 1998 (p.94-98)
- 52) Effect of cross-linking in presence of PEG 600 on dyeability of cotton— D.P. Chattopadhyay, J.K.Sharma & **A.K.Patra**—Indian Journal of Fibre & Textile Research- Vol.22, No.2, June 1997 (p.124-129)
- 53) Recent developments in reactive dyeing of cotton—**A.K.Patra** & Sanjay Gupta—Asian Textile Journal-Vol.3, No.4, Feb 1995 (p.57-60)
- 54) Sustainability in textile wet processing: managing water footprints-**A.K.Patra**- Woodhead Publication (accepted)
- 55) Combined wet pretreatment of cotton with enzymes – **Arun K Patra**, Shivani Gupta & Alka Ali - Indian Journal of Fibre & Textile Research (accepted)

b) Seminar/Conference attended (as speaker/ session chairman)

1. Virtual International Conference on Innovations in Textiles – Products and Processes (ITPP-21), DKTE Textile & Engg Institute, Ichalkaranji, 2-3 Sept 2021 (**Invited speaker**)
2. International Conference on Sustainable Growth in Textiles (SGT-2021), UPTTI Kanpur - 19-21 August 2021 (Session Chair) - Online
3. 25th IFATCC International Congress, 27-29 April 2021, Roubaix, **France** - Online
4. 5th International Conference on Industrial Textiles- Products, Applications and Prospects (INDUTECH), PSG College of Technology, Coimbatore, 21-22 August 2020 - Online
5. National Conference on Sustainable Growth in Textiles (SGT-2020), UPTTI Kanpur - UICT Jalgaon, 12-14 August 2020 (Session Chair) - Online

6. International Conference on Advances in Textile Manufacturing and Processes (ATMP 2019) UPTTI Kanpur, 02-03 Dec 2019 (also **Convener** of the event)
7. International Conference on Advances in Textile Manufacturing and Processes (ATMP 2018) at IIT Kanpur, 19-20 Nov 2018 (also **Convener** of the event)
8. 4th International Conference on Industrial Textiles- Products, Applications and Prospects, PSG College of Technology, Coimbatore, 17-18 August 2018 (**also chaired session**)
9. 44th Textile Research Symposium, IIT Delhi, 14 -16 Dec 2016
10. Bio Economy 2016 Conclave, India Habitat Centre, New Delhi, 29-30 Nov 2016 (as Panelist)
11. 24th IFATCC International Congress, 13-16 June 2016, Pardubice, **Czech Republic**
12. International Conference on Redefining Textiles: Cutting Edge Technology of the Future (RTCT -2016), 8-10 April, NIT Jalandhar (**also Chaired session**)
13. International Conference on Emerging Trends in Traditional and Technical Textiles (ICETT 2014), 11th -12th April 2014, NIT, Jalandhar. (**also Chaired session**)
14. SMARTEX 2011 World Textile Conference, Nov 22-24, 2011, Department of Specific Education, Kafrelsheikh University, **Egypt**
15. 39th Textile Research Symposium, IIT Delhi (Organized by Department of Textile Technology, IIT Delhi and Textile Machinery Society of Japan), 16th - 18th Dec 2010
16. 64th All India Textile Conference, held on 20th & 21st Dec 2008 at Bhilwara
17. International Conference on Futuristic trends in Textiles, held at NIT Jalandhar from 10th – 12th Dec 2007.
