

I. Biographical Data

Anil Kumar Anal

A. Personal Information

Name: Anil Kumar Anal

Nationality: Nepalese

Permanent Residency Status of New Zealand

Office Address: Food Engineering and Bioprocess Technology
School of Environment, Resources and Development
Asian Institute of Technology
PO Box 4, Klongluang, Pathumthani 12120, Thailand
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B. Education:

2003: Ph.D., Food Engineering and Bioprocess Technology
Asian Institute of Technology, Thailand

1998: M.Sc., Bioprocess Technology
Asian Institute of Technology, Thailand

1995: DVM (Doctor of Veterinary Medicine)
University of Agriculture, Faisalabad, Pakistan

Areas of Specialization:

- ✓ Herbs and Natural Products in Sustainable and Green Production of Food and Medicine
- ✓ Probiotics, Functional Foods and Nutraceuticals
- ✓ Bioprocessing of food waste and agro-residues for Value-addition in Food and Pharmaceutics
- ✓ Encapsulation and Controlled Release of Cells, Enzymes and Bioactive Compounds
- ✓ Safety and Applications of Nanotechnology in Food and Pharmaceutics
- ✓ Safety, Risk Assessment and Value-Chain Analysis in Food and Natural Products

C. Positions Held

Associate Professor (January 2014- till) Food Engineering and Bioprocess Technology;
Asian institute of Technology, Thailand

Coordinator (November 2013- till) Food, Agriculture and Bio Systems Cluster;
School of Environment, Resources and Development, Asian Institute of Technology,
Thailand

Assistant Professor (August 2009-December 2013) Food Engineering and Bioprocess
Technology; Asian Institute of Technology, Thailand

Associate Dean; Research and Outreach (January 2010-December 2012) School of Environment, Resources and Development (SERD), Asian Institute of Technology, Thailand

Senior Scientist (January 2008-July 2009) Living Cell Technologies (Global) Limited, New Zealand

Research Scientist (June 2005-January 2008), Riddet Institute (*Centre of Research Excellence*), Massey University, New Zealand

Postdoctoral Scientist (June 2003- June 2005) School of Pharmacy, University of Otago, New Zealand

Visiting Research Scientist (November 2000- February 2001), University of Santiago de Compostela, Santiago de Compostela, Spain

Visiting Research Scientist (April 2000- June 2000), Kansai University, Osaka, Japan.

Research Associate (August 1998- May 2003) Asian Institute of Technology, Thailand

Veterinary Officer (January 1996- January 1997): Department of Livestock Services; Ministry of Agriculture Development and Cooperatives; Nepal Government, Nepal.

D. Special Honors and Awards

- Keynote Speaker (1-3 February 2014); 1st International Conference and Annual Meeting of Myanmar Veterinary Association; Yangon (2014)
- **Guest Lecture** (5-9 November 2013); Institute of Technology, Surabaya, Indonesia (2013)
- **Resource Person and Panelist**, ProSPER.Net Young Researchers' School, Bangkok, Thailand (2013)
- **Keynote Speaker**, International Workshop on Exploring Biodiversity for Sustainable Development in South East Asia (EBSEA); 16-17 September 2013; Hanoi, Vietnam
- **Keynote Speaker**; International Forum of *High Value Utilization and By-Products*; Qingdao, China; 24-26 May 2013
- **Keynote Speaker**; The 4th International Conference of Indonesian Society for Lactic Acid Bacteria (4th IC-ISLAB); 25-26 January 2013.
- **Member, Editorial Board**, Aceh Journal of Science and Technology (2012-)
- **Member, Editorial Board**, Malkolok Journal of Marine Studies (2012-)
- **Resource Person and Panelist**; ProSPER.Net Young Researchers School "Building a Resilient Society in Asia"; Yogyakarta, Indonesia (2012)
- **Member, Advisory Board**; National Journal of Biological Sciences of Pakistan, (2011-)
- **Awarded Life Membership (Special Achievement) Award of Nepal Veterinary Association (NVA)** in recognition and Advancement of Scientific Development; (2011).
- **Associate Editor**; Asian Journal of Polymer Science; (2011-)
- **Regional Editor**, Pakistan Journal of Life and Social Sciences (2011-)
- **Member, Advisory Board**, Journal of Food Science and Technology (2010-)
- **Member, Editorial Board**, FUUAST Journal of Biology (2010-)
- **TOP REVIEWER AWARD** in 2007-2009 for Exceptional Contribution to Quality and Success of *Food Hydrocolloids* Journal, Awarded by Elsevier Ltd, Oxford, United Kingdom (2010).
- Best Thesis Award (Miss Melada, a Master Student at FEBT under my supervision), AIT (2010)
- **Most Cited Paper Award** by Elsevier Publications, Amsterdam, The Netherlands (2009).
- **Awarded Massey University Research Medal (Team)** (2005) for making outstanding research contributions (2005)
- Awarded the Best Research Medal (Ms Yin Zhang, Honors Student in Food Science and Technology at Massey University under my supervision) (2006).
- Postdoctoral Fellowship, Otago University, New Zealand (2003)

- Fellowships award by University of Santiago de Compostela, Spain (2000-01).
- Fellowship award by Kansai University, Osaka, Japan, (2000)
- Scholarship awarded by Austrian Government to pursue M.Sc. (1997-98)
- Scholarship awarded by FAO to pursue undergraduate study (1990-95)

Memberships/ Credentials:

- **Member, Editorial Board**, Malkolak Journal of Marine Studies **(2012-)**
- **Member, Editorial Board**, Aceh Journal of Science and Technology **(2012-)**
- **Member, Advisory Board**; National Journal of Biological Sciences of Pakistan, **(2011-)**
- **Professional Member**, Bioencapsulation Group, **2011**
- **Life Member**, Nepal Veterinary Association (NVA), **2011**
- **Associate Editor**; Asian Journal of Polymer Science; **(2011-)**
- **Regional Editor**, Pakistan Journal of Life and Social Sciences **(2011-)**
- **Member, Advisory Board**, Journal of Food Science and Technology **(2010-)**
- **Member, Editorial Board**, FUUAST Journal of Biology **(2010-)**
- **Professional Member**, Nepal Food Scientists and Technologists Association (NEFOSTA); **2010**
- **Professional member**, Royal Society of New Zealand, 2007
- **Professional member**, Controlled Release Society, 2002
- **Professional member**, Nepal Veterinary Association, 1995

A. Experience as a teacher

1. Courses taught, including courses taught to partner institutions

i) Bioprocess Technology

Bioprocess technology combines fundamental knowledge in agro-industrial and environmental technology, Microbiology, genetic engineering and biochemistry, with practical experience and practical data on technical application of microorganism enzymes and cellular components. Basic engineering calculations; mass and energy balances in bioprocess; fluid flow and mixing; mass transfer; homogenous and heterogenous reactions; biocatalysts and protein engineering; metabolic engineering; bioinformatics.

In the bioprocess practica training is focused on the setup of lab scale and pilot scale experiment that provide useful and reliable data on industrial and environmental useful microorganisms, bioconversions, fermentations and product downstream processing. Practical courses in Microbiology and Microbial Genetics; Genetic Engineering; Biomolecular Science and Technology; Biochemistry and Environmental Biotechnology.

ii) Safety and Standardization of Food Products

Introduction on food quality and safety issues, good agricultural practices (GAP), benefits of traceability systems, technology for traceability, international regulations and regulatory bodies on standardization and safety of food products, information management systems on food safety and traceability and food biotechnology.

iii) Dairy and Meat Biotechnology

Overview and concern on food security and food production; Role of agricultural and animal biotechnology in food production; Advanced technology in farm animal production for enhanced productivity and in role of poverty alleviation; Chemistry and biochemistry of dairy and meat processing; dairy and meat technology; safety of dairy and meat products.

iv) Processing Effects on Functional Components of Foods

Overview and concern on water and its relation to food and food products; Food polymers, colloids and micronutrients and their complexation with their well-being properties; Functional foods, herbs and dietary supplements; Physical, chemical and biodeterioration of foods; Biological oxidations in complex food systems; Interaction between the physical and biological environments with the food components; Nutrigenomics and Metabolomics

v) Advanced Bioprocess Technology Applications

Biotechnology opportunities in the food processing industry; Biosensor and analytical techniques using biocatalysts; products from recombinant DNA technology; animal and

plant cell biotechnology; the human genome project; stem cells research; extremophiles; biosafety; ethical and regulatory aspects.

III. Student Research Supervision

A. Thesis Supervised

STUDENTS	COMPLETED		IN-PROGRESS	
	Chair of the Committee	Co-Chair of the committee	Chair of the committee	Co-chair of the committee
DOCTORAL	Two (2)	None	Seven (7)	None
MASTER	Forty (41)	One (1)	Six (6)	None

Chairperson: Doctoral Dissertation (Completed; December 2013)

1. Mr. Zelealem Tesfay Gebretsadik (Ethiopia)
Title: Enhancing the Livelihood of Small Farm Households through Integrated Sheep Production in Ethiopia
2. Mr. Ms Taslima Ayesha Nasrin Akhtar (Bangladesh)
Title: Characterization and Production of Resistant Starch from Culled Banana to Encapsulate Fish Oil

Chairperson: Doctoral Dissertation Committee (Ongoing)

3. Mano Suwannakam (Thailand)
Title: Influence of Cooking by Infrared and Superheated Steam on the Physical Properties of Ready-to-Eat Chicken Breast Meat
4. Mr. Ali Akbar (Pakistan) (Completed January 2014)
Title: Prevalence and Biopreservation of food-borne pathogens (*Salmonella* and *Staphylococcus aureus*) in raw and ready-to-eat poultry meat
5. Mr. Zia-Ur Rehman (Pakistan)
Title: Integrated Production of Biofuels using Autotrophic Microalgal Species
6. Mr. Muhammad Bilal Sadiq (Pakistan)
Title: Assessment of Antimicrobial Resistance of Food-borne Enteric Pathogens and Pharmacological Evaluation of Natural Plant Extracts as Remedials
7. Mr. Rakesh Rahul Jadhav (India)
Title: Study of Post-harvest Quality Changes and Maintain the Quality of fresh Nile Tilapia (*Oreochromis niloticus*) and its fillets by Using Plant based extracts
8. Ms Su Aye Aye Hlaing (Myanmar)
Title: Enriched Biomass Production and Encapsulation of Micralgae for Novel food Production
9. Ms Su Hliang Chen (Myanmar)

Title: Assessment of Fungal Contamination in Peanuts and its Prevention by Chitosan and Bacteriocin from Probiotics during Various Storage Conditions

Chairperson: Master thesis (Completed)

1. "Effects of Soxhlet Extraction and Canning Method on Physical Properties and Charantin Content of Bitter Melon (*Momordica characntia*) Drink".
Ms. Rinnawat Chaijalearn (Thailand) (Manuscript in Progress)
2. Reinforced Cassava Starch Based Edible Film with Essential Oil and Clay Nanoparticles".
Ms. Butsadee lamareerat "Soy Protein Isolate-Essential Oils Based Edible Film for Food Packaging".
Ms. Supusanee Dulyakasem (Thailand) (Manuscript in Progress)
3. "Whey Protein Concentrates-Polysaccharides Based Microcapsules for Controlled Release of Folic Acid". Ms. Nongnard Jaroensri (Thailand)
4. "Effects of Chitosan on Enchancing the shelf life of Fresh Rice Noodle".

Ms. Rungnapa Kallapruek (Thailand) (Manuscript ready in submission)
5. Extraction, Characterization and Application of Phenolics from Cinnamon Barks and Banana Peels".
Ms. Sirorat Jaisanti (Thailand)
6. Reduction of Oil Content in Potato Crisps with Sugar Pre-Treatment".
Ms. Chotika Ounseng (Thailand)
7. Prevalence of *Salmonella* and *Escherichia Coli* in the Poultry Meat of Thailand and the Study of their Antibiogram".
Mr. Ali Akbar (Pakistan)
8. Antimicrobials from *Lactobacillus plantarum* isolated from turmeric (*Curcuma longa* Linn.) and their applications as biopreservative and in edible film;
Ms Melada Supakijnoraset (Thailand)
9. Microencapsulation of DHA producing cells for application in functional foods;
Ms. Chanokporn Uruan-ngam (Thailand)
10. Prevalence and safety concerns of antibiotic residues in milk of Kathmandu Valley;
Ms Balkumari Sharma Khanal (Nepal)
11. Extraction of PUFAs from the microorganisms isolated from Mangrove and their application in functional foods;
Ms Sayali Yenkar (india)
12. Effect of polyelectrolyte microencapsulation on the motility and cryopreservation of boran spermatozoa
Mr. Jeilu Jemal Bashir (Ethiopia)
13. Effect of superheated steam oven cooking on properties on ready-to-eat chicken breast meat
Mr. Jullachak Chunluan (Thailand)
(Industrial Project: CPF, Thailand)
14. Chilling effects on physico-chemical properties of ready-to-eat chicken meat
Mr. Rachan Inta (Thailand)
(industrial Project: CPF, Thailand)
15. Feasibility study of oil palm plantations for biodiesel production in Ubon Ratchathani Province, Thailand
Miss Waraporn Onputtha (Thailand)
16. Thailand: Challenges and readiness towards an ASEAN Economic Community 2015 (AEC 2015) platform: Focusing on the free flow of goods segment; A case study of the rice industry
Miss Sujata Bhatia (Thailand)
17. Rubber supply chain ad logistic cost analysis in the northern part of Thailand: A case study of Chiang Khong district, Chiang Rai Province
Miss Apinya Khongsanan (Thailand)

18. Comparison of cost and return analysis of on-season and off-season longan production in Lamphun province, Thailand
Miss Nattaporn Kassomboon (Thailand)
19. Extraction of Anthocyanins and lipid from pericarp and seed of *Garcinia mangostana* L. by ultrasound-assisted extraction (UAE)
Miss Lawan Hiranrangsee. **(Thailand)**
20. Autolysis and ultrasonic-assisted extraction of protein hydrolysates from white shrimp head (*Penaeus vannamei*) and application in food emulsion
Miss Nava rose Putmuang (Thailand)
21. Encapsulation of phytase enzyme in alginate-soy protein isolate based beads for monogastric animals feed formulation
Miss Jiraporn Kaowmek (Thailand) (Manuscript in Submission)
22. Augmentation of natural folate via fermentation with *Lactococcus lactis* in dairy- and non-dairy products
Miss Alisha Tuladhar (Nepal) (Manuscript in Progress)
23. Screening of bioactive extracts from plant sources and modulation of digestive enzymes and lipoprotein metabolism
Miss Shruti Mishra (India) (Patent in progress)
24. Effects of hydrocolloids on physical properties and protein concentration of chickpea flour beverages
Mr. Purnendu Singh (India)
25. Ultrasound assisted extraction of proteins from chicken bones: Optimization process and product development
Miss Sylvia Auy Widayati (Indonesia)
26. Application of ash from palm oil industry as adsorbent of food dyes
Miss Thiraphon Sumongkhon (Thailand)
27. Incorporation of isolated probiotic from fish gut in feed as functional additive for healthy and value added fish production
Miss Kishoree Krishna Kumari (India) (Manuscript in progress)
28. Effects of lactic fermentation on total polyphenol content and antioxidant activity of ginger (*Zingiber officinale* Roscoe), galangal (*Alpinia galangal* Linn.) and java turmeric (*Curcuma xanthoriza* Roxb)
Mr. Tezar Ramdan (Indonesia)
29. Nanofiber production from coconut husk by using rumen microbes
Mr. Chum Chanta (Cambodia) (Manuscript in progress)
30. Production of xylooligosaccharides from coconut husk and their prebiotics effect
Miss Krittayawan Bhumiwat (Thailand) (Manuscript in progress)
31. Functional properties of banana flower proteins and their applications
Miss Kewalee Sitthiya (Thailand)
32. Supply chain and presumptive pathogenic bacteria in poultry eggs
Miss Siriporn Chaemsanit (Thailand)
33. Microencapsulation of virgin coconut oil using biopolymeric blends
Ms Thuzar Mon (Myanmar)
34. Carboxymethylation of carrageenan and its application as antibacterial compounds
Mr. Bilal Muhammad Siddique (Pakistan)
35. Encapsulation and colon targeted delivery of anthocyanin
Miss Rashmi Supriya (India)
36. Antioxidant and Antibacterial Activities of Black Tea from Vietnam
Miss Huang Liyang (China)
37. Antibacterial Effect against *Streptococcus pneumoniae* of Bioactive Extracts from Natural Beehives (*Apis mellifera*) from East Java, Indonesia
Miss Zjhara Vianita Nugraheni (Indonesia)
38. Enhanced bioactivity of fermented sorghum by *Lactobacillus plantarum* in application of brownies
Miss Nur Istianah (Indonesia)

**External Evaluator/ Referee (Research Grant Application; Doctoral Dissertation)
(selected):**

- ✓ **External Reviewer; Research Grant Committee (RGC), Hong Kong,** (Every year at least three Since 2007)
- ✓ **Reviewer;** Develop roadmap for Biotechnology and Nanotechnology research in New Zealand, Ministry of Research, Science and Technology (MoRST), New Zealand (2007)
- ✓ **External Examiner, Doctoral Thesis** “Studies on stability and efficacy of microencapsulated folic acid in cheddar cheese and in methionine-induced hyperchromocystenemia in mice”, University of Western Australia, Sydney (2008).
- ✓ **External Examiner, Doctoral Dissertation,** “Synthesis and Characterization of Semiconductor Nanomaterials”, Punjab Technical University, India (2011)
- ✓ **External Examiner, Doctoral Dissertation,** “Treatment of Anaerobically Digested Distillery Effluent”, Institute of Technology, Banaras Hindu University, India (2012).
- ✓ **External Examiner, Doctoral Dissertation,** “Technological and Nutritional Evaluation of Sel-roti”, Tribhuvan University, Nepal (2012)
- ✓ **External Examiner, Doctoral Dissertation** “Physicochemical Changes in Bamboo Shoot of Assam During Processing and Its Quality by Applications of Antimicrobial-Anti browning Edible Coating”; Tejpur University; India (2014)

IV. Research

TOTAL NUMBER OF CITATIONS Excluding author (SCOPUS): 545
h-index excluding author (SCOPUS): 8

Citation (Google Scholar): 868

h-index (Google scholar): 10

A. Publications

PATENTS

1. **Anil Kumar Anal**, Harjinder Singh, Kyong S. Han, Fang Yuan, Kennedy Breda; ENCAPSULATION SYSTEM FOR PROBIOTICS DURING PROCESSING, European Patent; Application Number: 127152874/ Patent Number 1358 (**2013**)
2. **Anil Kumar Anal**, Harjinder Singh, Kyong S. Han, Fang Yuan, Kennedy Breda; ENCAPSULATION SYSTEM FOR PROBIOTICS DURING PROCESSING; US Patent 20,120,263,826, (**2012**)
3. **Anil Kumar Anal**, Harjinder Singh, Kyong S. Han, Fang Yuan, Kennedy Breda; ENCAPSULATION SYSTEM FOR PROBIOTICS DURING PROCESSING WO Patent 2,012,142,153, (**2012**).

Books

4. Anil Kumar Anal, Louis Hornyak and Anil Rao; Fundamentals of Bionanotechnology; CRC Press, Taylor and Francis Group Ltd., USA (In Progress)
5. Anil Kumar Anal; Utilizing By-Products from Food Processing: Challenges and Opportunities; Wiley-Blackwell, John Wiley & Sons Limited, England (In Progress) (Editor)
6. Athapol Noomhorm, Imran Ahmad and **Anil Kumar Anal**; *Functional Foods and Dietary Supplements: Processing Effects and Health Benefits*; Wiley-Blackwell, John Wiley and Sons Ltd. (**In Press**) (Editor)
7. Innovations in Food and Bioprocess Technology; I. Ahmad, A. Noomhorm, **A.K. Anal** and S.K. Rakshit (Eds); ISBN: 978-974-8257-81-5; Asian Institute of Technology; Thailand; (**2010**)

Book Chapters

8. Kishoree K. Kumaree, Mridula Thapa and **Anil K. Anal**; Bioactive Components in Foods: In: Functional Foods and Dietary Supplements: Processing effects and Health Benefits: A. Noomhorm, I. Ahmad and A.K. Anal (Eds) (**In Press**); Wiley-Blackwell, John Wiley and Sons. Ltd.
9. Nina K.M. Alparce and **Anil K. Anal**; Food Processing By-products as Functional Foods and Nutraceuticals; *In: Functional Foods and Dietary Supplements: Processing effects and Health Benefits*: A. Noomhorm, I. Ahmad and A.K. Anal (Eds) (**In Press**) Wiley-Blackwell, John Wiley and Sons. Ltd.
10. Alisha Tuladhar and **Anil K. Anal**; Recent Advances in Applications of Encapsulation Technology for Bioprotection of Phytonutrients in Complex Food Systems; *In: Functional Foods and Dietary Supplements: Processing effects and Health Benefits*: A. Noomhorm, I. Ahmad and A.K. Anal (Eds) (**In Press**) Wiley-Blackwell, John Wiley and Sons. Ltd.
11. Taslima Ayesha Aktar Nasrin and **Anil K. Anal**; Resistant Starch: Properties, Preparation and Applications in Foods; In: *Functional Foods and Dietary Supplements: Processing effects and Health Benefits*: A. Noomhorm, I. Ahmad and A.K. Anal (Eds) (**In Press**) Wiley-Blackwell, John Wiley and Sons.

12. Sutee W., A. Noomhorm, J.M. Regenstein, **Anil K. Anal**; Value-added Bioprocessing of Fish Waste to Gelatin; In: *Gelatin: Productions, Applications and Health Implications* G. Boran (Ed.); ISBN: 978-1-62417-671-5; Nova Publishers (2013),
13. **Anil Kumar Anal** and Alisha Tuladhar; Biopolymeric Micro-/Nanoparticles: Preparation, Characterization and Industrial Applications; In: *Multifaceted Development and Applications of Biopolymers towards Biology, Biomedical and Nanotechnology*; P.K. Dutta and J. Dutta (Eds.); Springer Ltd. (Publication: 2013) (Online available) DOI: 10.1007/12_2012-202
14. **Anil K. Anal**, Imran Ahmad, Jiraporn S., and Athapol Noomhorm; Sustainable Food Grain Processing; In: *Sustainable Food Processing*, Tomas Norton, Brijesh Tiwari, Nicholas Holden (Eds). Wiley-Blackwell, John Wiley and Sons Ltd, USA 2013
15. **Anil Kumar Anal**, Athapol Noomhorm, Punchira Vongsawasdi; Protein Hydrolysates and Bioactive Peptides from Seafood and Crustaceans Waste: Their Extraction, Bioactive Properties and Industrial Perspectives; In: Se-Kwon Kim (Ed.), *Marine Proteins and Peptides: Biological Activities and Applications*; ISSN: 978-1-1183-7506-8 Wiley-Blackwell, John Wiley and Sons Ltd., USA (2013), pp 709-736
16. **Anil K. Anal; Food Processing By-products**; In: Brijesh Tiwari, Tomas Norton, Nicholas M. Holden (Eds). *Handbook of Plant Food Phytochemicals: Sources, Stability and Extraction*; Wiley Science Publishers Inc., ISBN: 9781444338102 (2013); pp 180-198.
17. **Mohammad Abbas Mahmood**, Sunandan Baruah, **Anil Kumar Anal** and Joydeep Dutta; Microbial pathogen inactivation using heterogenous photocatalysis; In: Eric Lichtfouse, Jan Schwarzbauer and Didier Robert (Eds), *Environmental Chemistry for a Sustainable World: Remediation of Water and Air, Vol 2*, Springer Publications Ltd., The Netherlands ISBN: 978-94-007-2938-9 (2011) pp 511-542.
18. Vilai Rungsardthong, Maunmai Apintanopong, Natta Laohakunjit, and **Anil Kumar Anal**; In: *Advances in Odor and Flavor Science: A Review on Aroma Applications in Food Products*; Edited by Athapol Noomhorm, Imran Ahmad; LAP LAMBERT ACADEMIC Publishing GmbH & Co. KG, Germany, ISBN: 978-3-8433-8034-8; (2010)
19. **Anil K. Anal**; Controlled-Release Dosage Forms. *Pharmaceutical Sciences Encyclopedia: Drug Discovery, Development, and Manufacturing*. John Wiley and Sons Publishers, Hoboken, NJ, USA; 1–46.. DOI: 10.1002/9780470571224; ISBN: 9780470571224 (2010)
20. **Anil K. Anal**; Controlled Release Dosage Forms; In: *Pharmaceutical Manufacturing Handbook*; Shayne C. Gad (Editor); John Wiley and Sons Publishers, Hoboken, NJ, USA, ISBN: 978-0-471-21391-8, pp 347-392 (2008)
21. Dialysis by Chitosan Membranes; Suwalee C., **Anil K. Anal**, N. C. How, P. Wanichpongpan and W. F. Stevens; In: *Chitosan in Pharmacy and Chemistry*, R. A. A. Muzzarelli and C. Muzzarelli (Eds.), Atec Edizioni, Italy, PP 145-150 (2002)

Articles in Refereed **International Journals**

22. Zelealem T. Gebretsadik and Anil K. Anal; Effects of Wheat Bran and Sesame Seed Cake Supplements on the Growth performance and Carcass Characteristics of Begait and Abergelle Sheep Breeds; *Small Ruminant Research*; (Under Review) Impact factor: 1.124 (Elsevier Publications)
23. Zelealem T. Gebretsadik and Anil K. Anal; (2014) Indigenous Sheep Breeds of North Ethiopia: Characterization of Their Phenotype and Major Production System; *Tropical Animal Health and Production*; DOI 10.1007/s11250-013-0494-0 Impact factor: 1.090 (Springer Publications)
24. **Ali Akbar and Anil K. Anal**; Biopolymeric Active Packaging Loaded with Zinc Oxide Nanoparticles: A Challenge Study Against *Salmonella typhimurium* and *Staphylococcus aureus*; *Food Control*, **38** (2014) **88-95**. Impact Factor: 2.738 (Elsevier Publications)

25. Taslima Aktar, Athapol Noomhorm and Anil K. Anal; Physico-chemical Characterization of Starch and Flour from Plantain Waste for Their Value-Addition; *International Journal of Food Properties* (Ref: LJFP-2013-0112); Impact Factor: 0.877 (Taylor and Francis Publication) **In Press**
25. Taslima Ayesha Aktar and **Anil K. Anal**; Resistant Starch III from Culled Banana and Its Functional Properties in Fish Oil Emulsion; *Food Hydrocolloids*; 35 (2014); 403-409; Impact Factor: 3.494
26. Ali Akbar and **Anil K. Anal**; Occurrence of *Staphylococcus aureus* in ready-to-eat poultry meat and bio-control strategies for their preservation; *Annals of Microbiology*; DOI: 10.1007/s13213-013-0641-x (2013); Impact Factor: 1.549 (Springer Publications)
27. Saloko, S., Darmadji P., setiaji B., Pranoto Y. and **Anil K. Anal.**; Encapsulation of Coconut Shell Liquid Smoke in Chitosan-Maltodextrin Based Nanoparticles; *International Food Research Journal*; 20(3): 1269-1276 (2013).
28. Ali Akbar and **Anil K. Anal**; Prevalence and Antibiogram Study of *Salmonella* and *Staphylococcus aureus* in poultry meat; *Asian Pacific Journal of Tropical Biomedicine* **3: 163-168 (2013) (Elsevier Publications)**
29. Abraham Abate, Sudip K. Rakshit and **Anil K. Anal**; Genotypic and Phenotypic Characterization of Antimicrobial Resistance Patterns of *Salmonella* strains isolated from Sebata district, Ethiopia; *International Journal of Life Sciences*; 6(3): 191-199 (2013).
30. **Anil K. Anal**, Sirorat Jaisanti and Athapol Noomhorm; Enhanced yield of phenolic extracts from banana peels (*Musa acuminata* Colla AAA) and cinnamon barks (*Cinnamomum varum*) and their antioxidative potentials in fish oil; *Journal of Food Science and Technology*; DOI 10.1007/s13197-0793-x (2012).
Impact Factor: 1.123 (Springer Publications)
31. Plangpin Siwapornrak, **Anil Kumar Anal**, Galayanee Douangchawe, Athapol Noomhorm, Study on Enhanced Absorption of Phenolic Compounds of Lactobacillus-fermented Turmeric Beverages in Rats; *International Journal of Food Science and Technology*; 47(11): 2380-2387 (2012)
Impact Factor: 1.24 (Wiley Publications)
32. Mohammad Abbas Mahmood, Sunandan Baruah, **Anil Kumar Anal** and Joydeep Dutta; Heterogeneous Photocatalysis for Removal of Microbes from Water; *Environ Chem Letters*; 10: 145-151 (2012).
Impact Factor: 1.623
33. Bilatu Agza Gebre, Zelealem Tesfay Gebretsadik and **Anil Kumar Anal**; Effect of Metabolic Modifiers on Meat Quantity and Quality; *African Journal of Food Science*; 6: 294-301 (2012)
34. Zelealem Tesfay, **Anil Kumar Anal**, Gebrezgiher Gebreyohanis; Assessment of the Sheep Production System of Northern Ethiopia in Relation to Sustainable Productivity and Sheep Meat Quality; *International Journal of Advanced Biological Research*; 2 (2): 303-313 (2012) (
35. Ali Akbar and **Anil Kumar Anal**; Food Safety and Food-borne Pathogens, *Salmonella*, *Escherichia coli* and *Campylobacter*; *FUUAST Journal of Biology*; 1, 5-18 (2011).
36. Alisha Tuladhar, Shruti Mishra and **Anil Kumar Anal**, Development and Characterization of Nanoporous Chitosan Membranes as Matrix and Rate Controlling Elements for Controlled Drug Delivery; *Asian Chitin Journal*; 7 (1), 7-14. (2011).
37. Balkumari S. Khanal, Megh R. Bhandari, T. Sedai and **Anil K. Anal**, Study on the Prevalence of Antibiotic Residues in Milk Samples Collected from Kathmandu Valley; *Nepalese Veterinary Journal* (ISSN: 2091-0290); 30: 137-142 (2011).
38. Yakindra P. Timilsina, Jyotsana Shrestha and **Anil Kumar Anal**; Acrylamide: Thermally Induced Toxicants and Its Control Measures; *Journal of Food Science and Technology*; 6, 19-30 (2010).
39. **Anil K. Anal**; Microencapsulation and its Application in Delivery of Bioactive Compounds in Food Systems; *Innovative Science*; 1; (2010)
40. S J M Skinner, M Geaney, L Hai, M Muzina, **Anil Anal**, RB Elliott and P Tan; Encapsulated living choroid plexus cells: Potential long term treatments for central

nervous system disease and trauma; 2009 *Journal of Neural Engineering*, 6:1-11 (2009)
(MOST HIGHLIGHTED AND PROMINENT PAPER IN 2009)
Impact Factor: 3.837 (Wiley Publications)

41. **Anil K. Anal**, A. Tobiassen, J. Flanagan and H. Singh; Preparation and characterization of nanoparticles formed by chitosan-caseinate interactions; *Colloids and Surfaces B: Biointerfaces*, 64: 104-110 (2008) (Elsevier Publications)
Impact Factor: 3.417 (5-Year Impact Factor: 3.354) ;
42. **Anil K. Anal** and Harjinder Singh; Recent Advances in Microencapsulation Technologies for Probiotics for Industrial Applications: A Review; *Trends in Food and Science Technology*, 18: 240-251 (2007) (Elsevier Publications)
Impact Factor: 4.135 (5-Years Impact Factor: 5.857),
43. **Anil K. Anal**; Time-controlled Pulsatile Delivery Systems of Bioactive Compounds; *Recent Patents on Drug Delivery and Formulations*, 1 (1): 73-79 (2007) (Bentham Publications)
44. **Anil K. Anal**. Stimuli-induced Pulsatile or Triggered Release Delivery Systems for Bioactive Compounds; *Recent Patents on Endocrine and Metabolism Drug Discovery*, 1(1): 83-90 (2007) (Bentham Publications)
45. **Anil K. Anal**, Willem F. Stevens and Carmen R. Lopez, Ionotropic cross-linked chitosan microspheres for controlled release of ampicillin; *International Journal of Pharmaceutics*; 312: 166-173 (2006)
Impact factor: 3.458 (5-Years Impact Factor: 3.867) (Elsevier Publications)
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Publications (Full Paper) in Peer-Reviewed Conference Proceedings:

52. Nur Istianah, Setiyo Gunawan and **Anil Kumar Anal**; Effect of Fermented Sorghum Flour on Physico-chemical Properties of Bread; In Proceedings: Fifth International Conference on Fermentation Technology for Value Added Agriculture Products; 20-22 August 2013; Khon Kaen, Thailand
53. **Anil Kumar Anal**; Bioprocessing of marine waste for value-addition; In: Forum on Bioprocessing of Crustacean Waste to Value-Added Products; In Proceedings: *Forum of High Value Utilization and By-Products; Qingdao, China; 24-26 May 2013*;
54. Bal Kumari Sharma, M.R. Bhandari, K. P. Rai, D. R. Khanal and **Anil K. Anal**; Prevalence of antibiotic residues in milk of Kathmandu valley by HPLC method; *In*

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68. Anil Kumar Anal; Encapsulation Opening a New Dimension of Fortification; *Asia Food Beverage*; Vol. 11, May-June **2013**; pp 60-63.
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Publications (Abstracts) in Peer-Reviewed Conferences (Selected)

70. Anil Kumar Anal; Micro-/nanoencapsulation of Bioactive Compounds and Live Cells to Enhance Physical Stability and for Gastrointestinal Targeted Delivery: In: EXPLORING VEGETAL AND MICROBIAL DIVERSITY AND TECHNOLOGICAL INNOVATION FOR FOOD QUALITY AND SAFETY; 16-17 SEPTEMBER 2013; HANOI, VIETNAM (KEY NOTE SPEAKER)
71. ANIL KUMAR ANAL; ANTIBIOTIC AND SANITIZER IN FOOD PRODUCTION SYSTEMS: CONCERNS ON ANTIBIOTIC RESISTANCE AND PUBLIC HEALTH; IN: EXPERT WORKSHOP ANTIMICROBIAL RESISTANCE 2013; 4-6 FEBRUARY 2013; BANGKOK, THAILAND
72. Anil Kumar Anal; Encapsulation of Probiotics to Enhance Physical Stability and for Colon Targeted Delivery; PS-9 In: The 4th IC-ISLAB, Yogyakarta, Indonesia; 25-26 January **2013 (Invited)**
73. Kishore Krishna Kumaree and Anil K. Anal; Incorporation of Isolated Probiotics from Fish Gut in Feed as Functional Additive for Healthy and Value-Added Fish Production; P-48; In: The 4th IC-ISLAB, Yogyakarta, Indonesia; 25-26 January **2013**
74. Tezar Ramdan and Anil K. Anal; Effects of Lactic Fermentation on Total Phenolic Contents and Antioxidant Activity of Ginger (*Zingiber officinale* Roscoe), P-18; The 4th IC-ISLAB, Yogyakarta, Indonesia; 25-26 January **2013**
75. Anil Kumar Anal; Quality Preservation and Cost Effectiveness in the Extraction of Neutraceutically-Relevant Fractions from Herbal, Microbial and Vegetal Matrices; In: *1st Workshop on Herbal Therapy in Fish Farming: from Ethnobotany to Sustainable Aquaculture and Food Safety*; Vietnam (**2012**)
76. Ali Akbar and Anil Kumar Anal; Prevalence, Antibioqram Study and Preservation Techniques Against Staphylococcus aureus and Salmonella in Poultry Meat; IN: *6th Asian Conference on Food and Nutrition Safety*; Singapore (**2012**)
77. **Anil Kumar Anal**; Engineered Bioencapsulation of Bioactive Compounds for Controlled Gastrointestinal Passage to Enhance the Bioavailability; In: *Franco-Thai Symposium*, (**2012**)
78. **Anil Kumar Anal**; Climate Change and Microbial Ecology: Possible Impacts on Food Safety; In: Proceedings, *International Conference on Biodiversity, Livelihood and Climate Change in the Himalayas*; CC-23; Invited Paper (**2010**).
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80. Sayali M. Yenkar, Arindam Haldar & **Anil Kumar Anal**; Ionotropic Cross-linked Multilayer Emulsions for Encapsulation of Fish Oil; Paper presented at the *5th International Conference on Innovations in Food & Bioprocess Technology Bangkok*. (**2010**)
81. Microencapsulation in Bioprocess and Bioseparation Technology; *International Conference on Separation Processes, 20-22 October, 2009; Varanasi, India* (**2009**)
82. Biopolymeric particles for encapsulation of live cells- Biotransport and biocompatibility considerations; **Anil K. Anal**; In Proceedings: *Particles Synthesis, Characterization and Particle-Based Advanced Materials*, Particles 2008 Conference, Orlando, USA; **184: Invited Paper (2008)**.
83. Technologies for bioprotection of marine omega-3 fatty acids; In: *New Zealand & Australian Nutrition Societies Conference, Auckland, New Zealand*,. (**2007**) **Invited Paper**
84. Preparation and Characterization of Chitosan-milk protein nanocomplexes; **Anil K. Anal**, A. Tobiassen, J. Falanagan and H. Singh; Abstract in *8th International Hydrocolloid Conference Proceedings*; Trondheim, Norway (**2006**)

Oral Presentations (Invited Speakers) in International Conferences and Workshops (Selected)

85. Anil Kumar Anal; Micro-/Nanoencapsulation of Bioactive Compounds and Live Cells to Enhance Physical Stability and for Gastrointestinal Targeted Delivery; In: International Workshop on Exploring Biodiversity for Sustainable Development in South East Asia (EBSEA); 16-17 September 2013; Hanoi, Vietnam (**Keynote Speaker**)
86. Anil Kumar Anal; Bioprocessing of Crustacean Waste to Value-Added Products; In: *Forum of High Value Utilization and By-Products*; Qingdao, China; 24-26 May 2013; (**Keynote Speaker**)
87. **Anil Kumar Anal; Encapsulation of Probiotics to Enhance Physical Stability and for Colon Targeted Delivery; In: The 4th International Conference of Indonesian Society for Lactic Acid Bacteria (4th IC-ISLAB); 25-26 January, 2013; Yogyakarta, Indonesia (Keynote Speaker)**
88. Anil Kumar Anal; Quality Preservation and Cost Effectiveness in the Extraction of Nutraceutically-Relevant Fractions from Herbal, Microbial and Vegetal Matrices; In: *1st Workshop on Herbal Therapy in Fish Farming: from Ethnobotany to Sustainable Aquaculture and Food Safety*; Vietnam (**2012 (Invited Speaker)**)
89. Ali Akbar and Anil Kumar Anal; Prevalence, Antibioqram Study and Preservation Techniques Against Staphylococcus aureus and Salmonella in Poultry Meat; IN: *6th Asian Conference on Food and Nutrition Safety*; Singapore (**2012**)
90. Engineered Bioencapsulation of Bioactive Compounds for Controlled Gastrointestinal Passage to Enhance the Bioavailability; In: Franco-Thai Symposium, **2012 (Invited Speaker)**
91. Climate Change and Microbial Ecology: Possible Impacts on Food Safety (CC 23); International Conference on Biodiversity, Livelihood and Climate Change in the Himalayas; Kathmandu, Nepal **12-14 December 2010 (Invited Speaker)**
92. Emerging Trends in Food Safety; **Plenary Lecture**; 5th International Conference on Innovations in Food and Bioprocess Technology; Thailand; **7-9 December 2010.**
93. Phytochemicals and Functional Foods; **Special Lecture**; 10th International Agricultural Engineering Conference; Bangkok, Thailand; **7-10 December 2010**
94. Microencapsulation in Bioprocess and Bioprocess Technology; **Special Lecture**; *International Conference on Separation Processes, 20-22 October, 2009; Varanasi, India (2009)*
95. Structure and Techno-functional Properties of Customized Biocapsules: From Multilayers to Smart Containers for Delivery of Bioactive Molecules; *NZBIO2009 Conference, Auckland, New Zealand; 9-11 March, (2009) Invited Speaker*
96. Biopolymeric microparticles for encapsulation of live cells: Biotransport and biocompatibility considerations, *Particles 2008 Conference, Florida, USA (2008) Invited Speaker*
97. Technologies for bioprotection of marine omega-3 fatty acids; In: *New Zealand & Australian Nutrition Societies Conference, Auckland, New Zealand, 2007. (2007) Invited Speaker*

Oral Presentations in International Conferences and Symposia (Others, Selected)

98. Preparation and Characterization of Chitosan-milk protein nanocomplexes; In: *8th International Hydrocolloid Conference; 17-23 June 2006, Norway. (2006)*

99. Microencapsulation and functional Foods; In: Workshop, New Zealand Biocommerce Centre, *June 2005 Palmerston North, New Zealand (2005)*
100. Preparation and Characterization of Chitosan Membranes for Transdermal Drug Delivery; In: *5th Asia Pacific Chitin Chitosan Conference 2002*. Thailand,
101. Research and Development of Chitin and Chitosan Membrane for Bioseparation Techniques for Clinical Applications; In: *25th Congress on Science and Technology, Thailand; (2000)*.

Oral Presentations (Special Lectures, Invited) for various other technical Seminars (Selected)

102. Genetic Engineering and Biosafety; **Special Guest Lecture**; Maejo University, Chiangmai, Thailand; 19 November and 29 November **2010**; (Attended by more than 400 final year Undergraduate students from five Universities including Maejo, Chiangmai, Payap and Mae Fah Luang Univeristy)
103. Emerging Trends in Food Safety and Diagnostic Tools in Detection of Food Contamination; **Special Guest Lecture**; Food Safety Week (2-6 January 2011); Organized by Department of Food Technology and Quality Control, Ministry of Agriculture and Cooperatives; Government of Nepal; **3 January 2011**.
104. Structure and Techno-functional Properties of Customized Biocapsules: From Multilayers to Smart Containers for Delivery of Bioactive Molecules; Special Guest Lecture; Organized by Nepal Veterinary Association (NVA); Kathmandu, Nepal; **3 January 2011**
105. Innovative Methods and Tools to Reduce Food and Feed Contamination; **Special Guest Lecture**; Nepal Food Scientists and Technologists Association (NEFOSTA), Kathmandu, Nepal; **27 September 2010**.

Research Grants and Sponsored Projects (As PI) (ONGOING)

- i. Production of Bio-ethanol and Biomaterials from Oil palm Biomass: A study of Feedstock Sustainability, Technological Efficiency and Social Applicability**
Donorr: Regional Program "SDCC/AIT- France Network"
- ii. SEA-EU-NET Facilitating the Bi-regional EU-ASEAN Science and Technology Dialogue**
Donor: (EU FP 7 Funded Project)
- iii. EU-ASEAN Science and Technology Cooperation to Jointly Tackle Societal Challenges (Food Security and food safety, Water Management and health)**
EU FP 7 Funded Project
- iv. Development of Anti-fungal Acrylic Fiber for Novel Applications**
Industrial Project
Donor: Various
- v. Sustain EU-ASEAN**
Donor: EU FP7 Funded Project
- vii. SAVE FOOD ASIA PACIFIC**
Donor: FAO
- viii. Sustainable and Smart Food Processing**
Donor: FAO
- ix. The Effect of Shrimp Waste Fermented Products on Growth and Disease Protection of Rice and Chilli**
Donor: International Collaboration Research Award Program by Govt of Indonesia.
- x. Advance Analytical Instrumentation Trainings**
Donor: Various

Projects Completed (PI and Co-PI; Selected)

- ✓ Risk Assessment of the Pilot Release of Wolbachia Infected Mosquitoes on the Thailand Eliminate Dengue (USAID, Family Health Institute)
- ✓ Mutton Quality of Northern Ethiopian Sheep Breed as Affected by Genotype and the Environment; A project funded by The WORLD BANK
- ✓ Probiotics encapsulation and its fortification in various beverages and juices (PEPSI INC., USA; US PATENT).
- ✓ Extended release of flavor compounds in Chewing gum (Cadbury Schwapes, England)
- ✓ Microbead system to enhance the stability and incorporation of active ingredient in cosmetic applications (Biophile Inc., Thailand)
- ✓ Dialysis by Biocompatible and Biodegradable Chitosan Membranes (National Metals and Materials Technology Center, Thailand)
- ✓ Encapsulation of Omega-3 fish oil in product development (Riddet Institute, Massey University, New Zealand).

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