

**PROF. CHRISPIN B. O. KOWENJE**



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**EDUCATION**

**Jun – Dec 2009. Post-Doctoral studies;**

*Chemical Systems Engineering Department, The University of Tokyo - Japan;*

- **Emphasis:** Synthesis, characterization, and applications of Zeolites with and without Structure Directing Agents (SDAs) from very hydrophilic to very hydrophobic members.

**2002 – 2006: Ph.D. in Materials / Inorganic / Physical Chemistry:**

*Binghamton University, State University of New York (SUNY), New York, USA*

- **Emphasis:** Synthesis and spectroscopic characterization of complexes formed from the cations and ligands exchanged in zeolites.

**1995- 1998: MSc. In Physical/Inorganic Chemistry, Egerton University, Njoro, Kenya**

- **Emphasis:** Chemical behavior of rock phosphate fertilizers in soils.

**1989 – 1993: BSc. In Chemistry and Mathematical Statistics, Egerton University, Njoro. Kenya**

**RESEARCH EXPERIENCE**

*Research Experience and interests;*

- Catalysis for bio-fuels production.
- Synthesis and chemical tunability of microporous and mesoporous chemical systems – namely Zeolites.
- Decontamination of pesticides and pesticide products from the drinking water sources of Kenya by use of natural materials.
- Waste and drinking water purification regimes.
- Characterization of chemical and physical properties of water.

*Current teaching interests*

- Physical, industrial and environmental chemistry at undergraduate level
- Physical, environmental and materials chemistry at graduate level

**TEACHING EXPERIENCE**

**June 2017 – date:** Assoc. Professor, Dept. of Chemistry, Maseno Univ. – Kenya,

**May 2011 – June 2017:** Senior Lecturer, Dept. of Chemistry, Maseno Univ. – Kenya,

**Aug. 2006 – May 2011;** Lecturer, Dept. of Chemistry, Maseno University - Kenya.

**Jan. 2002- Aug 2006.** Teaching Assistant, Department of Chemistry, Binghamton University (BU), New York, USA.

## HONORS AND AWARDS

1. **2019-22:** Kenya National Science Foundation grant for “Green energy from agricultural waste for community livelihood”. In Collaboration with Kenya Industrial Research and Development Institute (KIRDI) and Jaramogi Oginga Odinga University of Science and Technology-JOUST.
2. **2018 -22:** Kenya National Science Foundation grant for Molecular application of protein phosphatase 2A in Cyanobacteria microcystin quantification and degradation in water purification systems. In Collaboration with Moi University, KEFRI – Kisii, and Masinde Muliro University of science and technology.
3. **2018-22:** Strategic Partnerships for Higher Education Innovation and Reform (SPHEIR) project between the University of Nottingham (UK), Maseno University, Kenyatta University, Jomo Kenyatta University of science and technology, Maasai Mara University, and University of Nairobi in Kenya and a number of stakeholders. This program is for a paradigm shift in teaching of chemistry and pharmacy in Kenya.
4. **2016-19:** *The Royal Society-DFID African Capacity Building Initiative - (AQ150029) in “Capacity Building in Porous Materials Research for Sustainable Energy Applications”* project. Collaboration with Nottingham University (Unite Kingdom), Council for Scientific and Industrial Research (CSIR - S. Africa), and University of Yaunde 1 (Cameroon).
5. **2013-2015:** Japanese – Kenyan Governments sponsored “Lake Victoria comprehensive Research and development (LAVICORD). *Component two on Bio-fence water purification methods.*
6. **2011-2013:** National Council for Science and Technology - Kenya; A ward of Science, Technology and Innovations (ST&I) Grant fund No. RIG/03A. Granted for work on “*Arresting lipid oxidation and browning of sundried fish products marketed in Western Kenya using low cost fish processing and preservation technologies*”.
7. **May 2009-Dec. 2009:** Matsumae international Foundation – Japan. Post-Doc Fellowship to Department of Chemical system engineering at The University of Tokyo Japan. On the *synthesis and applications of very hydrophilic to very hydrophobic mesoporous material (Zeolite) and its applications.*
8. **2007-2008;** International Foundation for Sciences (IFS) (W/4182). Principle investigator: On the *degradation kinetics and mechanisms of DDT in fresh lake waters.*
9. **2007-2008:** Royal Society of Chemistry - UK. Principle investigator. On the *abstractions and absorption of water pollutants by use of locally prepared activated carbons from agricultural wastes.*

## PROFESSIONAL MEMBERSHIP

1. Kenya Chemical Society
2. Member of Global Green Chemistry Society (GGCS)
3. Associate member of Royal Society of Chemistry (AMRSC)
4. Member of Materials Research Society (MRS)
5. Member of Electron Paramagnetic Resonance (EPR) society
6. Exceed-Swindon Partnership program

## SKILLS AND TRAINING

- June 2019:** Competency based Curriculum mapping and review at University level, Sirikwa hotel Eldoret – Kenya.
- April 2019:** Competency based Curriculum mapping and review at University level, Lake Naivasha hotel Naivasha – Kenya.
- Sept. 2018:** Research Monitoring Evaluation and Learning (MEL) – Day Star University on 3<sup>rd</sup> and 4<sup>th</sup> Sept. 2018, Kenya.
- Aug. 2018:** Project planning and proposal development training by Association of African Universities, Kampala, Uganda.
- July 2018:** Chemicals safety and security in higher learning Institutions in Kenya by Kenya Chemical society – Nairobi, Kenya.
- Nov. 2017:** Chemical inventory management system training for Kenyan Universities. Kisumu, Kenya.
- Dec. 2016:** Sustainable energy materials and their applications, CSIR, Pretoria, South Africa.
- May 2014:** Sustainable water management curriculum implementation at University level. – in Ouagadougou Burkina Faso.
- Mar. 2014:** Customer complaints handling, Maseno, Kenya.
- Nov. 2012:** Wastewater treatment plants and their managements. Sao Paulo – Brazil.
- April, 2011:** Water quality monitoring and testing – Aqaba – Jordan.
- Dec. 2010:** Environmental pesticides pollution and their detection. Burkina Faso.
- Nov. 2009:** Laboratory safety and Fire fighting, The University of Takyu, Japan.

## LEADERSHIP EXPERIENCE

### International:

- Mar. 2020:** Nominated Advisory board member for worldwide Future Talent Council. For Staff training and development.
- Oct. 2019:** Online journal editor for Exceed-Swindon “The future of water resources” conference proceedings publications.
- Jan. 2019-22:** Chairperson to Africa Future Earth Committee.
- May 2019:** Member to organizing committee for Modern and traditional water resource management in Africa; at University at Kwazulu Natal, S. Africa, under Sub-Sahara Africa exceed-swindon network.
- June 2018:** Chair to the organizing committee for “Holistic management of water resources workshop” under the auspices of Sub-Saharan Africa Exceed-Swindon, at the University of Yaoundé 1, Cameroon.
- May 2018:** A member of organizing committee for “*Seedbeds of Transformation*” a conference under the auspices of Future Earth. Port Elizabeth S. Africa.
- Nov. 2017:** Chairperson of Maseno University committee for workshop preparation on recent advances in renewable energy materials for Africa.
- Sept. 2016:** Drafted and negotiated for UNESCO water Chair to Mekelle University - Ethiopia under exceed partnership program.
- Aug. 2015:** Elected the *speaker for water quality group of experts* within Exceed-Swindon collaboration.
- July 2015:** Elected the *focal person for the Eastern Africa region* within Future Earth Africa committee.
- Feb. 2015:** Appointed a member of *Africa Future Earth committee*.
- Feb. 2013 – date:** Leader of Component 2 for *Lake Victoria Comprehensive Research and Development* (LAVICORD), collaboration between Maseno University and Nagasaki University of Japan on research on Lake Victoria.

**May 2013 – date:** A member of the *African Science Plans Development and Implementation Steering Committee* (ASP-DISC) within The International Council for Science Regional Office for Africa (ICSU ROA).

**Oct. 2013 – date:** Member to management board of *Exceed partnership program*.

### **In Kenya**

**April 2019:** Chair to the Chemistry and Pharmacy University level curriculum review for sustainable development and to Kenyan vision 2030 targets, Kisumu Kenya.

**Feb. 2019:** Elected chairperson of Board of Management (BOM) of Nico Hauser special school for the visually handicapped students.

**Jan. 2018:** A member of Biosecurity and Bio-preparedness committee – Maseno University Chapter.

**May. 2017:** A member of Maseno University committee for workshop preparation on bio-safety and bio-security.

**Sept. 2016:** Chairperson of committee drafting *Bottled water production proposal* of Maseno University.

**June. 2016:** Chairperson of committee drafting the *Global change institute policy* of Maseno University

**Feb. 2016:** A member of Maseno University Senate sub-committee on *Education standards* within the schools.

**Jan. 2015 – 20:** Chairperson, *Department of Chemistry*, Maseno University.

**Sept. 2012–15:** Coordinator at the *Center for New and Renewable Energy* (CNRE) of Maseno University.

### **CONFERENCES AND WORKSHOPS**

1. **July 1<sup>st</sup> -2<sup>nd</sup>, 2020:** Exceed-Sub-Sahara Africa workshop on Traditional methods of water resources management. Virtual meeting.
2. **June 15-17<sup>th</sup>, 2020:** Future Earth summit conference. Virtual meeting.
3. **Dec. 9-12<sup>th</sup> 2019:** Plenary presentation during the Africa Materials Research Society (AMRS), Arusha – Synthesis of Zeolites from clay materials as affected by agitation rates.
4. **June 2019:** A plenary lecture on “*evaluation of combinatorial water treatment for methods using natural traditional material*” during the Sub- Sahara Africa training workshop on Solid waste and wastewater management in developing countries: challenges and perspectives at University of Lome – Togo.
5. **May 2019:** A plenary talk on “*evaluation of combinatorial water treatment for methods using natural traditional material*” during Modern and traditional water resource management in Africa conference at University at Kwazulu Natal, S. Africa, under Sub-Sahara Africa exceed-swindon network.
6. **Sept. 2018:** Monitoring Evaluation and Learning (MEL) in Kenya – Nottingham and TESCEA, at Day Star University on 3<sup>rd</sup> and 4<sup>th</sup> Sept. 2018.
7. **Sept. 2017:** Point of use water purification system – Biofence concept. During the Water security and climate change conference, Cologne. Germany.
8. **May. 2017:** Phytoremediation of polluted water using Water hyacinth (*Eichnornia crassipes*) as a purifier and energy source: A molecular perspective. During Exceed-Swindon workshop on water security at Mekelle University. Ethiopia.

9. **Mar. 2017.** Optimization of chemically tuned zeolites for bio-diesel production from Jathropa seed oil. 1st Africa Energy Materials Conference (AEM-2017). Pretoria, South Africa.
10. **Dec. 2016:** Sustainable Development Goals Energy related nexus; During the Science Forum SA 2016 at the CSIR International Convention Centre, Pretoria, South Africa.
11. **July 2016:** Victor O. Shikuku, **Chrispin Kowenje**, Single and binary adsorptions of sulfachloropyridazine and sulfadimethoxine onto  $\gamma$ -Fe<sub>2</sub>O<sub>3</sub> modified clay: Kinetics, Equilibrium and Thermodynamics studies. During the Current trends in water purification methods workshop, Maseno University, Kisumu, Kenya.
12. **7-11<sup>th</sup> Sept. 2015: Kowenje C. O.** Plenary speaker on “*Sustainable Development Goals – the water related nexus*” during the Training course on importance of social and economic integration in Water Resource Management in the context of Sub-Saharan Africa; University of Malawi – Malawi.
13. **3<sup>rd</sup> – 6<sup>th</sup> Feb, 2015.** Agunja E. O., **Kowenje C. O** and Onger D. K. “Suitable combination of locally available materials for domestic water purification”, during the International conference on integrated ecosystem and water management in the Lake Victoria basin region of Kenya; Kisumu hotel, Kisumu Kenya.
14. **8 – 9 Aug. 2014. Kowenje C. O;** Optimising Zeolitic Catalysis for Environmental Remediation: A Case of Water Purification: During the Research network in Africa on pollution of the environment, at Ouaga Beach Hotel, Ouagadougou – Burkina Faso.
15. **May 26<sup>th</sup> – June 1<sup>st</sup>, 2014: C. O. Kowenje**, E. T. Osewe, E. and Urquieta-Gonzalez: Optimizing zeolite catalysis for water treatments. Implementation of Sustainable Water Management Curriculum at University Level in Africa; Pacific Hotel, Ouagadougou, Burkina Faso.
16. **9<sup>th</sup> – 12<sup>th</sup> April, 2013. C. O. Kowenje**, E. T. Osewe, J. A. Oguna, J. O. Agoro, and J. O. Lalah, Kinetics of water bound pesticides decontamination by faujasite zeolites, Technical University of Kenya during the Environmental and development conference. Held at Red Court hotel Nairobi – Kenya.
17. **Oct. 1-3 2012:** Oguna J. and **Kowenje C:** Kinetic studies of Malathion degradation in zeolite treated waters: During UNESCO / DAAD / Exceed Conference “Water in Africa” held at Maseno University, Kisumu Campus – Kenya.

## **PUBLICATIONS**

### **JOURNAL PUBLICATIONS:**

1. David M. Onyango<sup>1</sup>, Paul S. Orina, Rose C. Ramkat, Chrispin Kowenje, Cecilia M. Githukia, Dorcas Lusweti, Henry B.O. Lungaiya, (2020); Review of the current state of knowledge and the impact of microcystin in fish in Lake Victoria. Accepted for publications in *Lakes & Reservoirs: Science, Policy and Management for Sustainable Use*.
2. George O. Achieng, Chrispin O. Kowenje, Joseph O. Lalah, Stephen O. Ojwach; (2020). Preparation, characterization of fish scales biochar and their applications in the removal of anionic indigo carmine dye from aqueous solutions. *Water Science & Technology*, in press Feb. 2020
3. James O. Outa, Chrispin O. Kowenje, Annemariè A.–Oldewage, Franz Jirsa (2020), Trace Elements in Crustaceans, Mollusks and Fish in the Kenyan Part of Lake Victoria: Bioaccumulation, Bioindication and Health Risk Analysis. *Archives of Environmental Contamination and Toxicology*, <https://doi.org/10.1007/s00244-020-00715-0>.

4. James Omondi Outa, Chrispin O. Kowenje, Christof Plessl, Franz Jirsa (2019): Distribution of arsenic, silver, cadmium, lead and other trace elements in water, sediment and macrophytes in the Kenyan part of Lake Victoria: spatial, temporal and bioindicative aspects. *Environmental Science and Pollution Research*: <https://doi.org/10.1007/s11356-019-06525-9>.
5. Stephen O.Otieno, Fredric O.Kengara, Justin C.Kemmegne-Mbouguen, Henrietta W.Langmi, Chrispin B.O.Kowenje, and RobertMokaya; *The effects of metakaolinization and fused-metakaolinization on zeolites synthesized from quartz rich natural clays*. *Microporous and Mesoporous Materials*. Available online 19 Aug. 2019. <https://doi.org/10.1016/j.micromeso.2019.109668>.
6. Gertrude Estelle Yogback, Gideon Aghaindum Ajeegah, Lordon-Champlain Djieto, Silas Lagat Cheruiyo, Dickson Achuo Enah, Mama Mbouoombouo, Chrispin Kowenje. Biodiversity of Freshwater Shrimp of the Genus Macrobrachium (Decapoda Palaemonidae) in the Nyong Basin of Cameroon. *International Journal of Environment, Agriculture and Biotechnology (IJEAB) Vol-3, Issue-6,(2018)* <http://dx.doi.org/10.22161/ijeab/3.6.15> ISSN: 2456-1878. Pgs 2067-2082.
7. Victor O. Shikuku · Renato Zanella · Chrispin O. Kowenje · Filipe F. Donato · Nelson M. G. Bandeira · Osmar D. Prestes (2018). Single and binary adsorption of sulfonamide antibiotics onto iron-modified clay: linear and nonlinear isotherms, kinetics, thermodynamics, and mechanistic studies. *Applied Water Science*, (2018) 8:175. Pg. 1 – 12.
8. Victor O. Shikuku, Chrispin O. Kowenje and Fredrick O. Kengara, (2018), Errors in Parameters Estimation Using Linearized Adsorption Isotherms: Sulfadimethoxine Adsorption onto Kaolinite Clay. *Chemical Science International Journal*. 23(4): 1-6, 2018; Article no.CSIJ. 44087. ISSN: 2456-706X
9. Wilfrida Nyanduko Nyairo, Yasin Ramazan Eker, Chrispin Kowenje, Ilker Akin, Haluk Bingol, Ali Tor & David Mokono Onger (2018). Efficient adsorption of lead (II) and copper (II) from aqueous phase using oxidized multiwalled carbon nanotubes/polypyrrole composite. *Separation Science and Technology*, 1, 1-14. DOI: 10.1080/01496395.2018.1424203.
10. S. O. Otieno, C. O. Kowenje, A. Okoyo, D. M. Onyango, K. O. Amisi, and K. M. Nzioka (2018). Optimizing Production of Biodiesel Catalysed by Chemically Tuned Natural Zeolites. *Materials Today: Proceedings* Vol 5, 4, Part 2, 10561-10569.
11. Kowenje CO, and Haarstrick A (2018): Attaining Secure and Sustainable Water Management for Developing World. *Open Access J Sci* 1(6): 00032. DOI: 10.15406/oajs.2017.01.00032.
12. Yacoub Idriss Halawlaw, Galmaï Orozi, Kowenje, C. and Njipouakouyou Samuel (2017). A North-South Technology Transfer Methodology. *Asian Journal of Science and Technology Vol. 08, Issue, 12, pp.7000-7007, December, 2017*.
13. V.O. Shikuku, R. Zanella, C.O. Kowenje, F.F. Donato, N. Bandeira and O.D. Prestes (2017), Single and Competitive Removal of Sulfachloropyridazine and Sulfadimethoxine onto Natural Kaolinite Clay: Kinetics, Isotherms and Thermodynamics Studies. *S. Afr. J. Chem.*, 70, 120–126,
14. Wilfrida N. Nyairo, Yasin R. Eker, Chrispin O. Kowenje, Erhan Zor, Haluk Bingol, Ali Tor, David M. Onger (2017). Efficient Removal of Lead (II) Ions from Aqueous Solutions Using Methyl-β-Cyclodextrin Modified Graphene Oxide. *Water, Air, & Soil Pollution*, Volume 228; doi:10.1007/s11270-017-3589-9.
15. Ogunah J. A, Owuor P. O. Kowenje C. O and Lalah J. O. Effect of Copper (II) on the Sorption/Desorption of Chlorsulfuron in Five Wheat Growing Regions of the Mara River Basin, Kenya. *American Journal of Experimental Agriculture* 2016. 10(5): 1-9,, ISSN: 2231-0606.

16. Victor O. Shikuku, **Chrispin O. Kowenje**, Renato Zanella, Osmar D. Prestes. A Comparison of Adsorption Equilibrium, Kinetics and Thermodynamics of Aqueous Phase Clomazone on Faujasite X and a Natural Zeolite from Kenya. *South Africa J. Chemistry.*, **2015**, 68, 245–252.
17. D. M. Onyango, J. Nyirima, T. B. Sote, A. W. Sifuna, P. Otuya, R. Owigar, **C. Kowenje**, A. Oduor and H. Lungay'ia. Evaluation of the effectiveness of traditional Rastrineobola argentea sundrying process practiced along Lake Victoria, Kenya. *Food and Public health*, **2015**, 5(3), 61-69.
18. Shikuku V.O., **Kowenje C.O.**, Ongeru D.M.K., Zanella R., Prestes O.D. Removal of Tebuconazole from Wastewater by Zeolite X: Kinetics and Thermodynamics Studies, *Intern. J. of Eng. Res. & Tech.*, **2014**, 3 (8), 1584-1590, (ISSN online: 2278-0181).
19. Y. Kamimura, **C. Kowenje**, K. Yamanaka, K. Itabashi, A. Endo, T. Okubo. Synthesis of hydrophobic siliceous ferrierite by using pyridine and sodium fluoride. *Microporous and Mesoporous Materials* **181 (2013) 154–159**.
20. **C. O. Kowenje**, E. O. Tetty, J. O. Lalah. Effects of Faujasite X and Y Zeolites on the 1,1,1-Trichloro-2,2' bis(*p*-chlorophenyl)ethane (DDT) Degradation during Water Purification. *Intern. J. of Environ. Protec. and Policy.* (**2013**) 1 (1), 9-15.
21. D. J. Agoro, **C. O. Kowenje**, J. O. Lalah, E. T. Osewe, J. A. Ogunah, Effects of Zeolite X on Dissipation of Hexazinone from Agricultural Waste Waters in Western Kenya, *Intern. J. of Eng. Res. & Tech.*, **2013**, 2 (10), 177-185, (ISSN: 2278-0181).
22. J. A. Ogunah, **C. O. Kowenje**, E. T. Osewe, J. O. Lalah, D. A. Jaoko, R. N. Koigi. Effects of Zeolites X and Y on the Degradation of Malathion in Water. *Sci. J. of Chem.* (**2013**)1 (1), 7-13.
23. S. C. Lagat, J. O. Lalah, **C. O. Kowenje**, Z. M. Getenga, R. Chepkui, Metribuzin Sorption Dynamics In Acid Soils Of Nzoia Sugarcane Zone In Western Kenya. *Int.J. Disaster Manag. Risk. Reduct. Issn: 1992-2744* Vol. 3(2), **2011**; 43-51.
24. S. C. Lagat, J. Lalah, **C. O. Kowenje**, Mobility of Metribuzin in soil column as affected by environmental and physico-chemical parameters in Mumias Sugarcane Zone, Kenya. *ARPN J. of Agri. and Bio. Science*, (**2011**), 6, 249.
25. **C. O. Kowenje** and D. C. Doetschman; Sensoring gaseous ammonia by cation exchanged Faujasite-X zeolite. *Intern. J. of BioChemiPhysics.* **2010**, 18, 1-7.
26. **C. O. Kowenje**, D. C. Doetschman, C. W. Kanyi, S.-W. Yang, B. R. Jones, J. DeCoste, J. T. Schulte, K. Yan, J. B. Sumbur, and M. –H. Lee, “Effects of copper (II) exchange levels in Faujasite-X on ammonia ligations”. *J. of S. A. chem. Soc.*; **2010**, Vol. 63, 6-10.
27. C. K Chepkwony, **C. O. Kowenje**, P. O. Ongoma, C. M. Nguta, and R. K. Ngeno. Sodium Bicarbonate extractable Phosphate levels in some Acid soils of Rift Valley Province, Kenya, Fertilized with Rock Phosphate and superphosphate sources. *Intern. J. of BioChemiPhysics*, **2006**, 15 (1), 46-51.
28. **C. O. Kowenje**, B. R. Jones, D. C. Doetschman, S.-W. Yang, and C. W. Kanyi “Effects of Cation Siting and Spin-Spin Interactions on the Electron Paramagnetic Resonance (EPR) of Cu<sup>2+</sup> Exchanged X Faujasite Zeolite”. *J. of Chem. Phy.*, **330 (3)**, **2006**, 401-409.
29. S.-W. Yang, D. C Doetschman, J. T. Schulte, J. B. Sumbur, C. W. Kanyi, J. D. Fox, **C. O. Kowenje**, B. R. Jones, and N. D. Sherma, “Sodium X-Type Faujasite Zeolite Decomposition of Dimethyl Methylphosphonate (DMMP) to Methylphosphonate. Nucleophilic Zeolite Reactions I.” *Microporous and Mesoporous Materials* **92 (2006) 56-60**.
30. C. W. Kanyi, D. C. Doetschman, J. T. Schulte, K. Yan, R. E. Wilson, B. R. Jones, **C. O. Kowenje**, and S.-W. Yang. “Linear, Primary Monohaloalkane Chemistry in NaX and NaY

Faujasites with and without Na<sup>0</sup> –Activation. Zeolites as Nucleophilic Reactions II”, *Microporous and Mesoporous Materials*, **92** (2006), 295-302.

### **BOOKS AND BOOK CHAPTERS:**

- 1. Oct. 2019:** Victor O. Shikuku, George O. Achieng’ and Chrispin O. Kowenje Removal of dyes from wastewater by Adsorption onto Low-Cost Adsorbents “*In Impact of Textile Dyes on Public Health and the Environment*”. **IGI Global** Pennsylvania 17033-1240, USA. Pg. 239-257. IP address 198 201 218 211.
- 2. Aug; 2019:** E. O. Agunja, D. M. Ogeri, B. C. Nyamosi, W. Nyairo, C. Kowenje; Evaluating combinatorial water treatment by locally available materials, pg. 109-125. In Stephen Ojwach, Precious Mahlambi, Chrispin Kowenje, Gnon Baba, Modern and traditional methods of water resource management in Africa. Cuvillier Verlag, Gottingen, Germany, ISBN 978-3-7369-7041-0, Eisbn: 978-3-7369-6041-1.
- 3. Aug. 2019:** Stephen Ojwach, Precious Mahlambi, Chrispin Kowenje, Gnon Baba, Modern and traditional methods of water resource management in Africa. Cuvillier Verlag, Gottingen, Germany, ISBN 978-3-7369-7041-0, Eisbn: 978-3-7369-6041-1.
- 4. Nov. 2018:** G. Ajeegah, M. Kapso, A.W. Letah Nzouebet, J.R. Njimou, G.V. Djumyom Wafo, C. Kowenje, B. Gnon, S. Pare; A treatise of appreciation of the relationship between the Water Security Index (WSI) and the Sustainable Development Goals (SDG) in Tropical Africa. In Marcelo Nolasco, Elvis Carissimi, Ernesto Urquieta-Gonzalez:n Water Perspectives in Emerging Countries :Linking Water Security to Sustainable Development Goals. August 29 – September 1, 2018 - São Paulo, Brazil. Pgs 2 -10.
- 5. July 2018:** Victor Odhiambo Shikuku, Wilfrida N. Nyairo, Chrispin O. Kowenje (2018): Preparation and Application of Biochars for Organic and Microbial Control in Wastewater Treatment Regimes in Athar Hussain (Chaudhary Brahm Prakash Government Engineering College, India) and Sirajuddin Ahmed (Jamia Millia Islamia, India). Advanced Treatment Techniques for Industrial Wastewater (pages 19-34) Release Date: July, 2018|Copyright: © 2019 |Pages: 303 ISBN13: 9781522557548|ISBN10: 1522557547|EISBN13: 9781522557555|DOI: 10.4018/978-1-5225-5754-8
- 6. Aug. 2017: Chrispin Kowenje**, Samuel Pare, and Bizuneh Asfaw: Proceedings of experts’ workshop on Water Security. Cuvillier Verlag, Gottingen, Germany. ISBN: 978-3-7369-9588-8, eISBN: 978-3-7369-8588-9. Pgs. 204.
- 7. Aug. 2017:** D. Onyango, **C. Kowenje**, C. Ayieko, P. Onyango. Phytoremediation of polluted water using Water hyacinth (*Eichnornia crassipes*) as a purifier and energy source: A molecular perspective. In **C. Kowenje**, S. Pare, and Bizuneh Asfaw: “Water Security”. Cuvillier Verlag, Gottingen, Germany. ISBN: 978-3-7369-9588-8, eISBN: 978-3-7369-8588-9. Pg. 69-81.
- 8. Feb. 2017:** Shikuku V.O., **Kowenje C.O.**, Nyairo W.N. Fundamentals and Sources of Magnetic Nanocomposites and Their Sorption Properties In Advanced Nanomaterials for Water Engineering, Treatment, and Hydraulics by Tawfik A. Saleh pg 58 -83. IGI Global E-Editorial Discovery. Netherlands. ISBN13: 9781522521365, DOI: 10.4018/978-1-5225-2136-5
- 9. 2017: Kowenje C.O.** and Tsamba A. J.: **2015. “Renewable Energy Science Plan for Sub-Saharan Africa”**. Garnett Design Studio, Pretoria S. Africa, ISBN 978-0-620-74575-8.
- 10. 2016: Kowenje C. O.**, Pare S. Sustainable use of water resources; proceedings of experts’ workshop July 3 – 8, Kisumu, Kenya. Published by Cuvilier Verlag, Gottingen, Germany. ISBN 978-3-73699453-9, Eisbn 978-3-7369-8453-0.



11. **2015. Kowenje, C.O** and D. Onyango, “Natural zeolites as catalysts for bio-fuel production”. In *Compendium of Energy Science and Technology (Vol. 10)*. Editor: J. V. Gohil. Stadium Press LLC. Houston, TX. USA. *Energy Science and Technology Vol. 7: Bioenergy*. Pg. 220-35; ISBN 1-626990-68-9.
12. **2015. Kowenje, C. O.** and Osewe E. T. *Optimising Zeolitic Catalysis for Environmental Remediation*: In Ashutosh Tiwari and Salam Titinchi (eds.) *Advanced Catalytic Materials*. Scrivener Publishing LLC. Beverly, MA. USA pg.411–438. ISBN: 978-1-118-99828-1.
13. **2014. Kowenje, C.O** and Agunja E. O: *Chemical Pollution of Lake Victoria; A Case Review of Winam Gulf*. In Five Years of Exceed; Sustainable water management in developing countries, Edited Mufit Bahadir and Andreas Haarstrick. Published by Beyrich digitalservice GmbH & Co., Braunschweig, Germany. Pg 227-241. ISBN: 978-3-00-046519-2.
14. **2014.** Pare S., Abera A., **Kowenje C. O.**, Baba G., Kolb M., Sajidu S. M. I., Takoungang S. M., Masamba W. R. L., Bonzi-Coulibaly Y. L.: *Promoting Sustainable Water management In Sub-Saharan Africa*. In Five Years of Exceed; Sustainable water management in developing countries, Edited by Mufit Bahadir and Andreas Haarstrick. Published by Beyrich digitalservice GmbH & Co., Braunschweig, Germany. Pg 103-117. ISBN: 978-3-00-046519-2.
15. **2014:** Chrispin **Kowenje**, *Inorganic Chemistry I*. Published by African Virtual University. 134 pages. <http://hdl.handle.net/123456789/41>

#### **CONFERENCE PROCEEDINGS:**

1. **July 2016:** Victor O. Shikuku, **Chrispin Kowenje**, Single and binary adsorptions of sulfachloropyridazine and sulfadimethoxine onto  $\gamma$ -Fe<sub>2</sub>O<sub>3</sub> modified clay: Kinetics, Equilibrium and Thermodynamics studies. During workshop on *Current trends in water purification methods*, Maseno University, Kisumu, Kenya.
2. **Sept. 2015: Kowenje C. O.** Plenary speaker on “*Sustainable Development Goals – the water related nexus*” during the Training course on importance of social and economic integration in Water Resource Management in the context of Sub-Saharan Africa; University of Malawi – Malawi.
3. **Feb. 2015:** Agunja E. O., **Kowenje C. O** and Onger D. K. “Suitable combination of locally available materials for domestic water purification”, during the International conference on integrated ecosystem and water management in the Lake Victoria basin region of Kenya; Kisumu hotel, Kisumu Kenya.
4. **2014:** Chrispin Kowenje; *Optimising Zeolitic Catalysis for Environmental Remediation: A Case of Water Purification*: During the Research network in Africa on pollution of the environment, at Ouaga Beach Hotel, Ouagadougou – Burkina Faso.
5. **2012:** Oguna J. and **Kowenje C:** Kinetic studies of Malathion degradation in zeolite treated waters: During UNESCO / DAAD / Exceed Conference “Water in Africa” held at Maseno University, Kisumu Campus – Kenya.
6. **C. O. Kowenje**, R. Kimura, M. Kubo, Y. Kamimura, R. R. Mukti, K. Itabashi, T. Okubo: Synthesis and Characterization of Ferrierite with Different Si/Al Ratios; A Study of their Hydrophilicity and Hydrophobicity, IZC-IMMS, **2010**. RRP-34.
7. **C. O. Kowenje**, E. T. Sewe, J. O. Lalah, “Kinetics and decontaminations studies of DDT in fresh waters in the presence of Zeolites”, RRR1-4, ZMPC **2009**, pp. 133.
8. **C. O. Kowenje** and D. C. Doetschman, **2008**, Spectroscopic Detection of Gaseous Ammonia in the Environment. In the Jacob Midiwo and John Clough; aspects of African Biodiversity;

Proceedings of the Pan Africa Chemistry network Biodiversity Conference, Nairobi, 10-12; Pg 143-151.

9. **C. O. Kowenje**, B. R. Jones, and C. W. Kanyi, “Effects of possible Spin Spin interactions on the EPR spectra of  $\text{Cu}^{2+}$  in CuX zeolites I”. *Materials Research Society Proceedings (Fall. 2007)* Paper #: 0900-O12-25.
10. C. W. Kanyi, **C. O. Kowenje**, and Ka-king Yan, “Reactions of organohalogens with Zero-valent ( $\text{Na}^0$ ) treated Faujasite zeolites at room temperature”. *Materials Research Society Proceedings (Fall. 2005)*. Paper #: 0900-O09-28.