



## KOHOBHANGE S. P. KARUNADASA

Research Scientist

Materials Technology Section

Qualifications	<b>B.Sc. (Hons) Special in Chemistry</b> (University of Peradeniya), <b>Ph.D.</b> (Reading), <b>M. I. Chem. C.</b>
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Specialized Fields	Chemistry (Electrochemistry), X-ray Diffraction, Materials Science, Nanotechnology
Interest Areas	Materials Science, Mineral processing & Metal extraction, Electrochemistry, X-ray Diffraction, Nanotechnology, Energy Storage Devices, Fuel Cells, Green Synthesis
Publications	<b>Publications</b> <ol style="list-style-type: none"><li>1. <b>Kohobhange S. P. Karunadasa</b> 2024. Structure-stability correlations in terms of microstructure during tin oxidation as examined by in situ high-temperature X-ray powder diffraction, <i>Chemical Papers</i> 78(6): 3617-3628</li><li>2. P. M. H. Madhushanka, <b>Kohobhange S. P. Karunadasa</b>, R. M. Gamini Rajapakse 2024. Graphite-colloidal graphite-kaolinite-cement quaternary composite electrode with improved synergetic matrix effect towards efficient energy storage and electroanalytical applications, <i>Chemical Papers</i>. 1-14</li><li>3. <b>Kohobhange S. P. Karunadasa</b>, P. M. H. Madhushanka, C. H. Manoratne 2024. Low-cost ternary composite photocatalysts consisting of TiO<sub>2</sub>, kaolinite and cement for an efficient organic waste decontamination in water, <i>Journal of Polymer Science and Engineering</i> 7(1): 4510</li><li>4. <b>Kohobhange S. P. Karunadasa</b>, A. S. K. Wijekoon, C. H. Manoratne. 2024. TiO<sub>2</sub>-kaolinite composite photocatalyst for industrial organic waste decontamination, <i>Next Materials</i>, 3 (2024) 100065.</li><li>5. P. M. H. Madhushanka, <b>Kohobhange S. P. Karunadasa</b>, R. M. Gamini Rajapakse, C. H. Manoratne, H. M. N. Bandara. 2024. Low-cost composite electrode consisting of graphite, colloidal graphite and montmorillonite with enhanced electrochemical performance for general electroanalytical</li></ol>

techniques and device fabrication, Chemical Papers.

6. P. P. B. Gunarathne, **Kohobhange S. P. Karunadasa**. 2023. Low-cost heterogeneous composite photocatalyst consisting of TiO<sub>2</sub>, kaolinite and MMT with improved mechanical strength and photocatalytic activity for industrial wastewater treatment, *Insight-Mechanics*, 6
7. **Kohobhange S. P. Karunadasa**, R.M.G. Rajapakse, H.M.T.G.A. Pitawala, C.H. Manoratne. 2023. Microstructural insight into the thermal decomposition of MgCl<sub>2</sub>·6H<sub>2</sub>O examined by in-situ high-temperature X-ray powder diffraction, *Journal of Solid State Chemistry* 322: 123965.
8. D. T. Rathnayake, **Kohobhange S. P. Karunadasa**, A. S. K. Wijekoon, C. H. Manoratne, R. M. G. Rajapakse, H. M. T. G. A. Pitawala. 2023. Polyaniline-conjugated graphite–montmorillonite composite electrode prepared by in situ electropolymerization for supercapacitor applications. *Chem. Pap*, <https://doi.org/10.1007/s11696-022-02646-7>
9. **Kohobhange S. P. Karunadasa**, C. H. Manoratne 2022. Microstructural view of anatase to rutile phase transformation examined by in-situ high-temperature X-ray powder diffraction, *Journal of Solid State Chemistry*. 314: 123377.
10. D. T. Rathnayake, **Kohobhange S. P. Karunadasa**, A. S. K. Wijekoon, C. H. Manoratne, R. M. G. Rajapakse. 2022. Low-cost ternary composite of graphite, kaolinite and cement as a potential working electrode for general electrochemical applications. *Chem. Pap*. <https://doi.org/10.1007/s11696-022-02314-w>
11. **Kohobhange S. P. Karunadasa**, C. H. Manoratne, H. M. T. G. A. Pitawala, R. M. G. Rajapakse 2021. A binder-free composite of graphite and kaolinite as a stable working electrode for general electrochemical applications. *Electrochem Sci Adv.* 2021;e5100003 ([doi.org/10.1002/elsa.202100003](https://doi.org/10.1002/elsa.202100003))
12. **Kohobhange S. P. Karunadasa**, C. H. Manoratne, H. M. T. G. A. Pitawala, R. M. G. Rajapakse 2019. A potential working electrode based on graphite and montmorillonite for electrochemical applications in both aqueous and molten salt electrolytes. *Electrochemistry Communications*. 108: 106562.
13. **Kohobhange S. P. Karunadasa**, C. H. Manoratne, H. M. T. G. A. Pitawala and R. M. G. Rajapakse 2019. Thermal decomposition of calcium carbonate (calcite polymorph) as examined by in-situ high-temperature X-ray powder diffraction. *J. Phys. Chem. Solids*. 134: 21-28.
14. **Kohobhange S. P. Karunadasa**, C. H. Manoratne, H. M. .G. A. Pitawala

and R. M. G. Rajapakse 2018. The effect of prolonged milling time on comminution of quartz. *Powder Technol.* 330: 266-274.

15. **Kohobhange S. P. Karunadasa**, C. H. Manaratne, H. M. T. G. A. Pitawala and R. M. G. Rajapakse 2018. The composition, unit cell parameters and microstructure of quartz during phase transformation from  $\alpha$  to  $\beta$  as examined by in-situ high-temperature X-ray powder diffraction. *J. Phys. Chem. Solids.* 117: 131-138.
16. **Kohobhange S. . Karunadasa**, C. H. Manaratne, H. M. T. G. A. Pitawala and R. M. G. Rajapakse 2018. Relative stability of hydrated/anhydrous products of calcium chloride during complete dehydration as examined by high-temperature X-ray powder diffraction. *J. Phys. Chem. Solids.* 120: 167-172.
17. **Kohobhange S. P. Karunadasa** 2018. Dehydration of calcium chloride as examined by high-temperature X-ray powder diffraction. Third Asia-Pacific Conference on Multidisciplinary Research 2018. 33-40
18. I.R.M. Kottegoda, H. C. D. P. Colombage, **Kohobhange S. P. Karunadasa**, D.S. Samarawickrama, C. H. Manaratne 2013. An efficient Reactor for Purification of Domestic Water Using Solar Energy, *International Journal of Energy Engineering.* 3 (3): 93-98

#### COMMUNICATIONS (International)

1. Rathnayake, D. T., Tharangani, L. W. N., **Kohobhange S. P. Karunadasa.**, Manaratne, C. H. (2019). Mechanically compressed graphite-clay composite electrode for high-temperature applications, International Research conference Uva-Wellassa University (IRCUWU), Badulla, Sri Lanka, 7-9 February. pp. 456
2. Tharangani, L. W. N., Rathnayake, D. T., **Kohobhange S. P. Karunadasa.**, Manaratne, C. H. (2019). The incorporation of layered type clay in graphite-clay based electrodes as a property enhancement for high-temperature applications, International Research conference Uva-Wellassa University (IRCUWU), Badulla, Sri Lanka, 7-9 February. pp. 445
3. Mahanama, M. G. G. C., **Kohobhange S. P. Karunadasa.**, Manaratne, C. H. (2018). A composite electrode for high-temperature application as a value addition to local graphite and kaolinite, Wayamba University International Conference (Win C). Kuliypitiya, Sri Lanka, 24-25 August. pp. 16
4. **Kohobhange S. P. Karunadasa.**, Manaratne, C. H., Pitawala, H. M. T. G. A., Rajapakse, R. M. G. (2018). Dehydration of calcium chloride as examined by high-temperature X-ray powder diffraction. Asia-Pacific Conference on Multidisciplinary Research, 3, Colombo, Sri Lanka, 06-07 July. pp. 18

5. **Kohobhange S. P. Karunadasa.**, Manoratne, C. H., Pitawala, H. M. T. G. A., Rajapakse, R. M. G. (2017). The phase transformation of quartz from  $\alpha$  to  $\beta$  as examined by in-situ high temperature X-ray diffraction, Asia-Pacific Conference on Multidisciplinary Research, 2, Colombo, Sri Lanka. pp. 49

#### COMMUNICATIONS (Local)

1. P.M.H. Madhushanka, **Kohobhange S. P. Karunadasa**, R.M. Gamini Rajapakse, C.H. Manoratne, (2023). Polyaniline conjugated graphite-clay composite electrodes fabricated by electro-polymerization for supercapacitor applications, 6<sup>th</sup> *Biennial Symposium of ITI*, ITI, Colombo 7, Sri Lanka.
2. **Kohobhange S. P. Karunadasa.**, Manoratne, C.H. Pitawala, H.M.T.G.A., Rajapakse, R.M.G. (2019). Property enhancement of calcium chloride by synthesizing stable ternary eutectic electrolyte for molten salt electrochemical applications, *Biennial Symposium of ITI*, ITI, Colombo 7, Sri Lanka, 17-18 December. pp. 28
3. D.T. Rathnayake, **Kohobhange S. P. Karunadasa**, C.H. Manoratne, (2021). A competitive composite electrode consisting of graphite and clay for electroanalytical applications, 5<sup>th</sup> *Biennial Symposium of ITI*, ITI, Colombo 7, Sri Lanka.

#### PATENTS

1. **K.S.P. Karunadasa**, C. H. Manoratne, (Industrial Technology Institute), 2020. A stable composite electrode based on graphite and clay for high-temperature and general electrochemical applications, Sri Lanka Patent. 20844.
2. **K.S.P. Karunadasa**, H.D.D.P. Gunasekara H.A.M.I.T. Hettiarachchi, W.R.L. Wijesekara, I.R.M. Kottegoda (Industrial Technology Institute) 2018. Fabrication of photo-catalytic continuous flow reactor using plastic pipes for decontamination of organic waste. Sri Lanka Patent. 18851
3. I.R.M. Kottegoda, **K.S.P. Karunadasa**, H.A.M.I.T. Hettiarachchi, H.D.D.P. Gunasekara (Industrial Technology Institute) 2013. Immobilization of TiO<sub>2</sub> on a substrate using polymer/binder/adhesive for photo-catalytic air/water purification system, Sri Lanka Patent. 17486

#### AWARDS

	<ol style="list-style-type: none"> <li>1. Achievement Award for “<b>Best Innovative Project 2023</b>”, (6<sup>th</sup> Biennial Research Symposium, 2023)</li> <li>2. Achievement Award for “<b>In recognition of award winning Academic and scientific Excellence</b>” (6<sup>th</sup> Biennial Research Symposium, 2023)</li> <li>3. Achievement Award for “<b>Best Innovative Project 2021</b>”, (5<sup>th</sup> Biennial Research Symposium, 2021)</li> <li>4. Achievement Award for “<b>In recognition of award winning Academic and scientific Excellence</b>” (5<sup>th</sup> Biennial Research Symposium, 2021)</li> <li>5. Achievement Award for “<b>In recognition of award winning Academic and scientific Excellence</b>” (4<sup>th</sup> Biennial Research Symposium, 2019)</li> </ol>
<p><b>Major Projects Undertaken</b></p>	<ol style="list-style-type: none"> <li>1. Conversion of readily available Sri Lankan natural quartz to solar grade silicon for applications in electronic industries (TG 24/245)</li> <li>2. A low-cost electrode modified by controlled synthesis of nanofiber network of homo/copolymer of aniline and pyrrole on graphite-clay composite substrate for supercapacitor applications (TG 21/193)</li> <li>3. Performance enhancement of binary graphite-clay composite electrodes via fabricating quaternary composites with better surface characteristics for the development of supercapacitors and sensors (TG 24/246)</li> </ol>