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Novel Electro-Crystallization of Ferricenyl Materials from Coordination-Driven Self-Assembled Ferrocenyls

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New neutral tetra-ferrocenyl-ethynylpyridinyl copper complexes have been formed by the coordination-driven self-assembly of the ferrocenylethynyl-pyridine Ligand (L) and the copper (I) halides (I-, Br- and Cl-) forming cubic $L_4(CuI)_4$, and rhomboid $L_4(CuBr)_2$, $L_4(CuCl)_2$. However, in the presence of triphenylphosphine (PPh3) under similar conditions, the reactions gave new neutral di-ferrocenyl-ethynylpyridinyl copper complexes, $L_2(CuI)_2(PPh_3)_2$, $L_2(CuBr)_2(PPh_3)_2$, and $L_2(CuCl)_2(PPh_3)_2$. Ferrocenylethynyl functionalized pyridine ligand provided the coordination site to connect ferrocenyl units through the copper clusters.

The ferrocenylethynyl-copper cluster materials oxidize under mild condition giving electro-crystallization of oxidized products. EDX analysis indicated formation of partially- and fully-oxidized products. These results were complimented by Raman analysis. SEM showed oxidation products having distinct morphologies. Some of these morphologies of the electrodeposited Cu-based microstructure are of high recent interest for fundamental studies and for potential applications in catalysis and other fields.

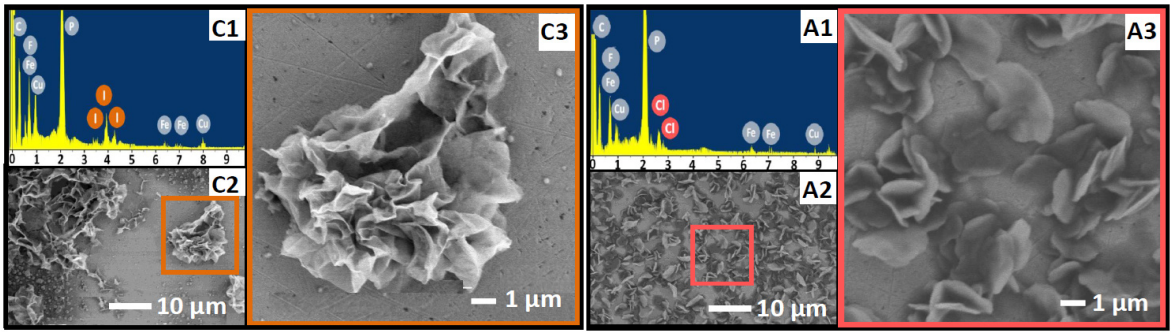

Figure 1 EDX spectra shown in panels : (A1) & (C1) while; (A2) & (C2) show low magnification and (A3) & (C3) show high-magnification SEM images

Herein, we will present the convenient synthesis, electrochemistry, SEM, EDX, etc. and future prospect of the electro-crystallized multi-ferricenyl materials.

The body of the abstract should describe your research, results and conclusions of your study.

Biography:

Dr. Hakikulla Shah was born in Dhule, Maharashtra, India, in 1982. He received the B.Sc. degree in Chemistry from the North Maharashtra University, Jalgaon, India, in 2004, and the M.Sc (Major: Analytical Chemistry) Chemistry from Wadia College, Pune University, India. He pursued his Ph.D. degree in Chemistry (Organometallics) from Sultan Qaboos University, Oman in 2013. During his Ph.D. he also obtained a research scholarship from British Council, UK from a British council PMI-2 Research collaboration in the Middle East grant. During his Ph.D. training Dr. Shah stayed half of every year at University of Bath, UK from 2010-2012 as a British Council visiting scholar. Currently, Dr. Shah is working at Department of Basic Science, in College of Applied Science at A'Sharqiyah University, Oman.