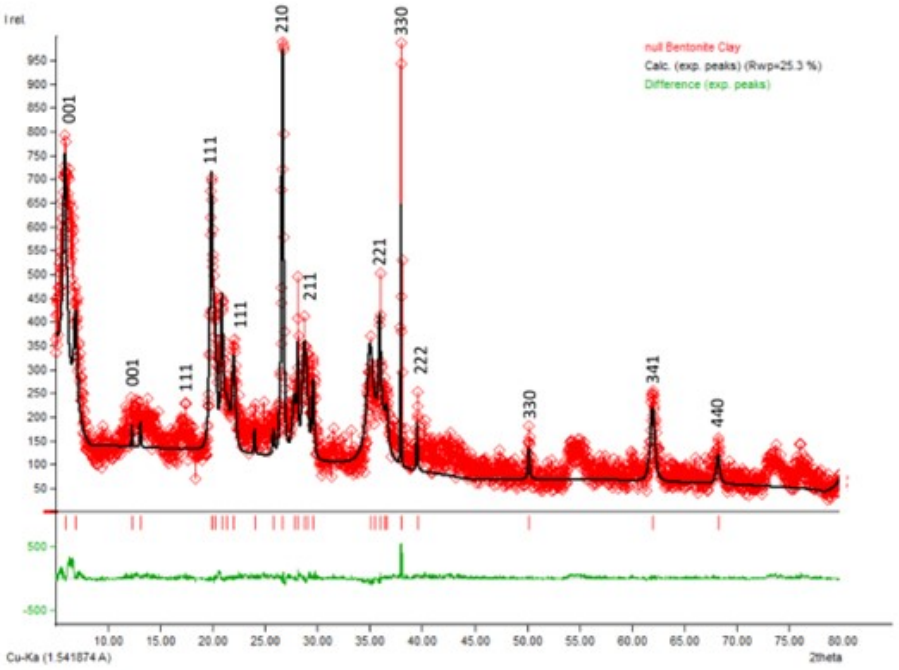
Synthesis, Characterization, and Dielectric Properties of Bentonite Clay Modified by (3-chloropropyl) triethoxysilane and Co(II) Porphyrin Complex for Technologies Electronic Devices Application

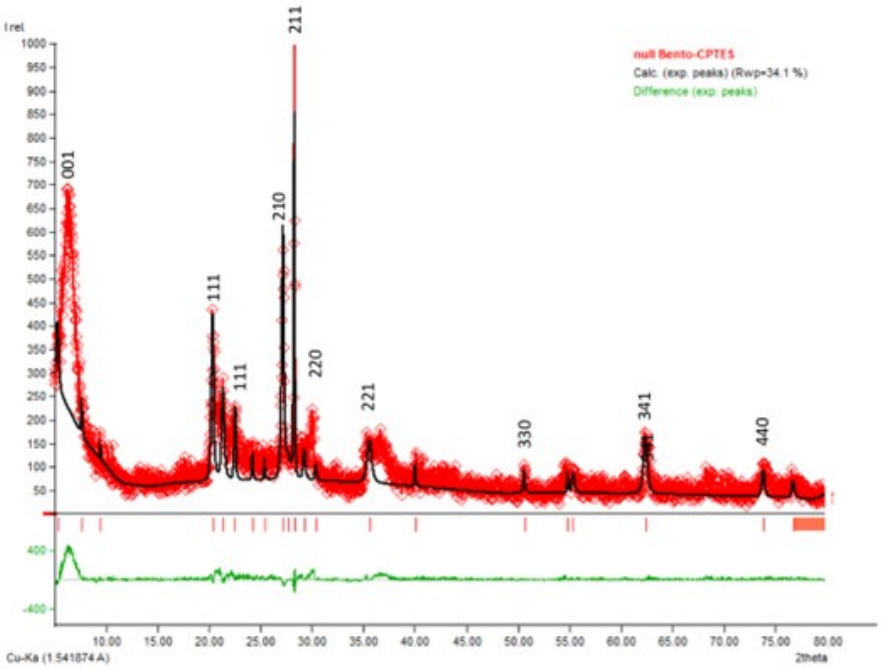
Sahar H. El.Khalafy[1]*, Mahmoud T. Hassanein[1] , Mohamed M. Alaskary[1], Galal H. Ramzy[2] and Ahmed I. Ali [3, 4*]

[1]Department of Chemistry, Faculty of Science, University of Tanta, Tanta 31527, Egypt
[2]Physics Department, Faculty of Science, Cairo University, Giza, 12613, Egypt.
[3]Basic Science Department, Faculty of Technology and Education, Helwan University, Sary El-Qopa P.O.11281, Cairo, Egypt.
[4]Department of Applied Physics and Institute of Natural Sciences, College of Applied Science, Kyung Hee University, Suwon 446—701, Republic of Korea.

*Corresponding Authors: (Sahar H. El-Khalafy: Sehar_hasouna@science.tanta.edu.eg) and (Ahmed I. Ali: Ahmed_Ali_2010@techedu.helwan.edu.eg).

Supplementary Materials


I rel.
null Bentonite Clay
Calc. (exp. peaks) (Rwp=25.3 %)
Difference (exp. peaks)
001
001
111
111
111
210
211
221
222
330
330
341
440
Cu-Ka (1.541874 A)
2theta


I rel.
null Bento-CPTES
Calc. (exp. peaks) (Rwp=34.1 %)
Difference (exp. peaks)
001
111
111
210
211
220
221
330
341
440
Cu-Ka (1.541874 A)
2theta

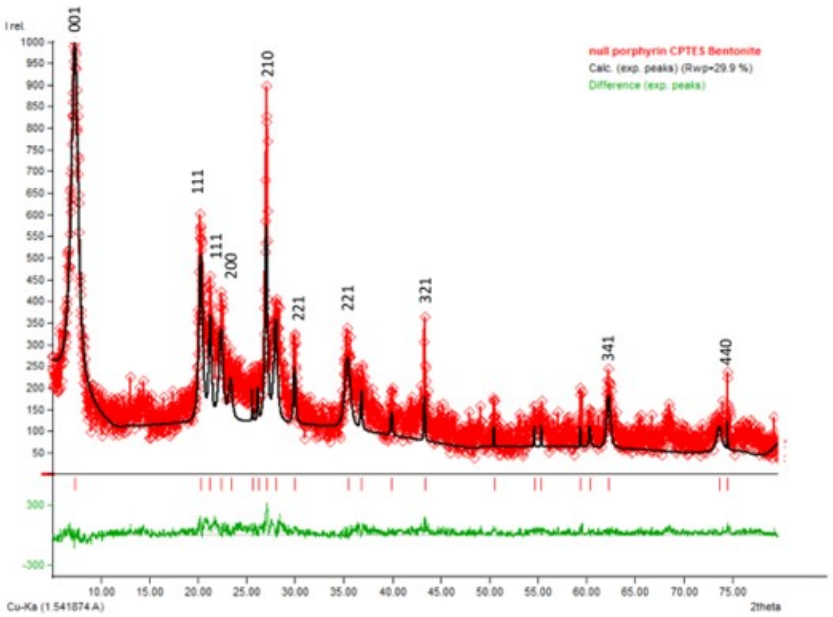


Figure S_1. Rietveld refinement of x-ray diffraction patterns of Bentonite clay, CPTES-Bentonite clay and Co(II)TP-OHPP/ CPTES-Bentonite clay.

Lattice Parameters	Bentonite clay	CPTES-Bentonite clay	Co(II)TP-OHPP/ CPTES-Bentonite clay
Lattice constant *a* (Å)	8.19	7.61	7.84
Lattice volume *V* ($Å^3$)	548.89	440.71	481.89
Crystallite size *D* (nm)	29.82	67.66	38.74
Dislocation line density *(δ)*	20.20	12.67	33.78
Root means square error (RMS)	28.69	22.74	19.50
Goodness of fitting (χ^2)	2.011	2.331	1.842

Table S_1. Lattice parameters of bentonite clay, CPTES-bentonite clay, and Co(II)TP-OHPP/ CPTES-bentonite clay.