Supplementary Materials

Novel Fluticasone Propionate and Salmeterol Fixed-Dose Combination Nano-Encapsulated Particles Using Polyamide Based on L-Lysine

Mohammad H. Alyami[1], Eman Zmaily Dahmash[2], Dalia Khalil Ali[3], Hamad S. Alyami[1], *, Hussien AbdulKarim[2], and Samar A. Alsudir[4]

1   Department of Pharmaceutics, College of Pharmacy, Najran University, Najran, Kingdom of Saudi Arabia; mhalmansour@nu.edu.sa,   hsalmukalas@nu.edu.sa

2   Department of Applied Pharmaceutical Sciences and Clinical Pharmacy, Faculty of Pharmacy, Isra University, Amman, Jordan; eman.zmaily@iu.edu.jo, hussein.abdalkarem@yahoo.com

3   Department of Physiotherapy Department, Faculty of Allied Medical Sciences, Isra University, Amman, Jordan; dalia.ali@iu.edu.jo

4   National Center of Biotechnology, Life Science and Environmental Research Institute, King Abdulaziz City for Science and Technology, Riyadh, Saudi Arabia; salsadeer@kacst.edu.sa

*   Correspondence: Hamad S. Alyami, email: hsalmukalas@nu.edu.sa , Tel.: +966500095255

Section S1
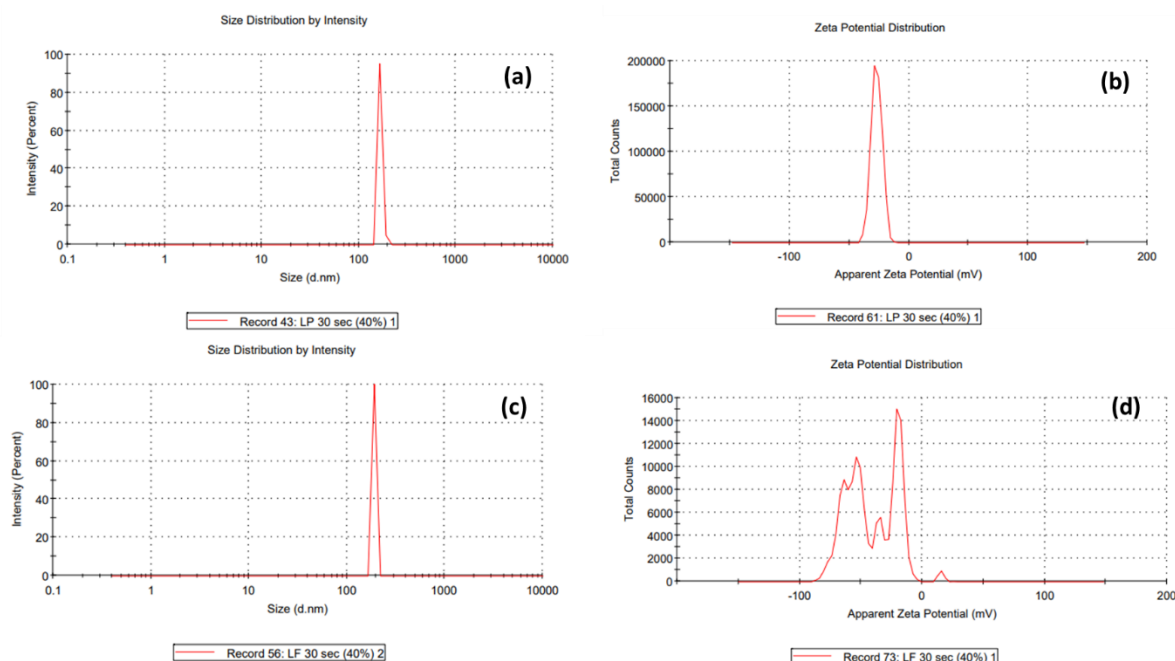
Particle size analysis

Figure S1. Representative images of particle size analysis (PSA) and zeta potential for (a) PSA of (FP-SAL/Lys-PA) NCs, (b) zeta potential of (FP-SAL/Lys-PA) NCs, (c) PSA of of Lys-PA NCs and (d) zeta potential analysis for Lys-PA NCs.

Section S2

Release Kinetic Modelling

Figures S2-S6 demonstrated the linear regression of the five release kinetics mathematical models for fluticasone propionate (FP).
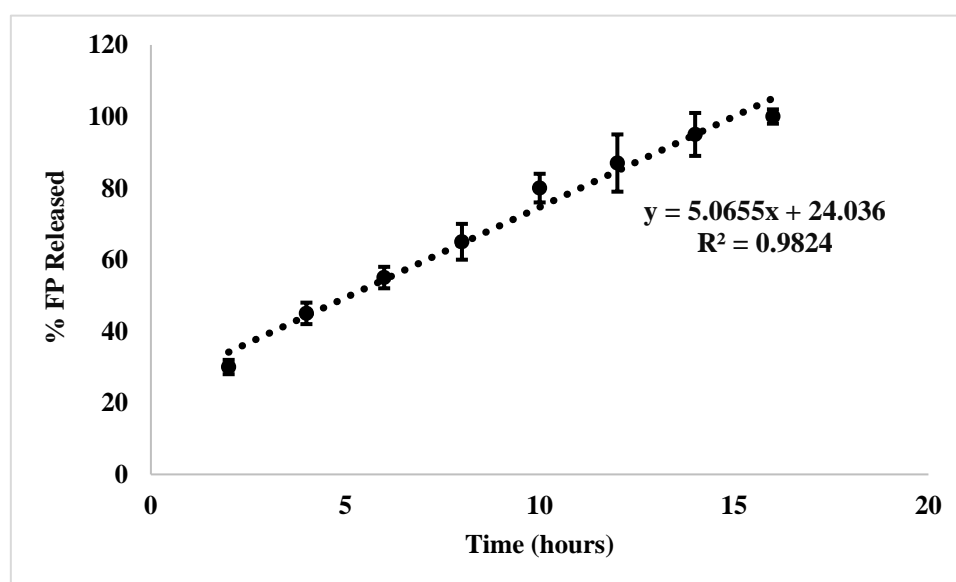

Figure S2. Linear regression of Zero Order Kinetics mathematical model of FP from FP-SAL-loaded Polyamide based on L-Lysine nanocapsules (F3) with the related equation, and coefficient of determination (R^2) value.
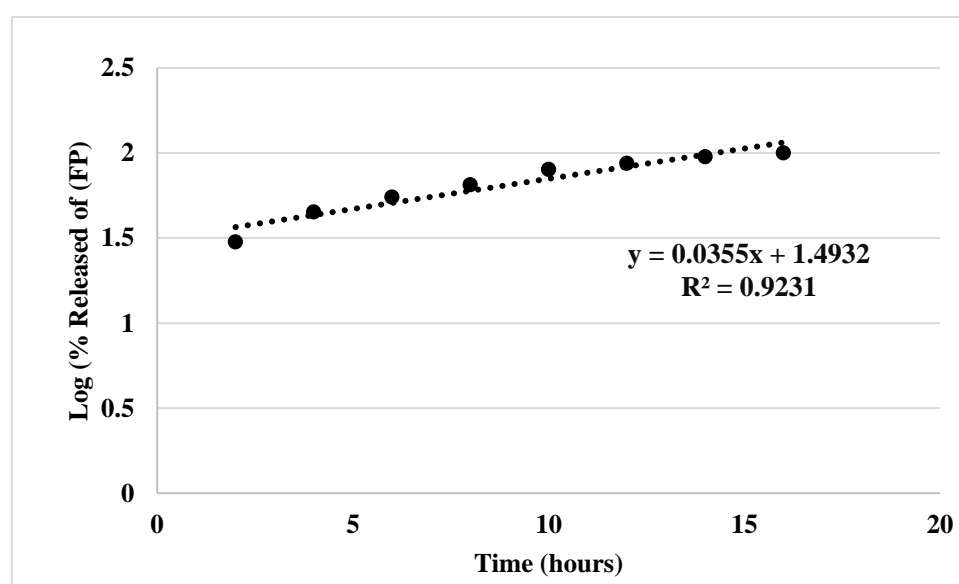

Figure S3. Linear regression of First Order Release Kinetics mathematical model of FP from FP-SAL-loaded Polyamide based on L-Lysine nanocapsules (F3) with the related equation, and coefficient of determination (R^2) value.
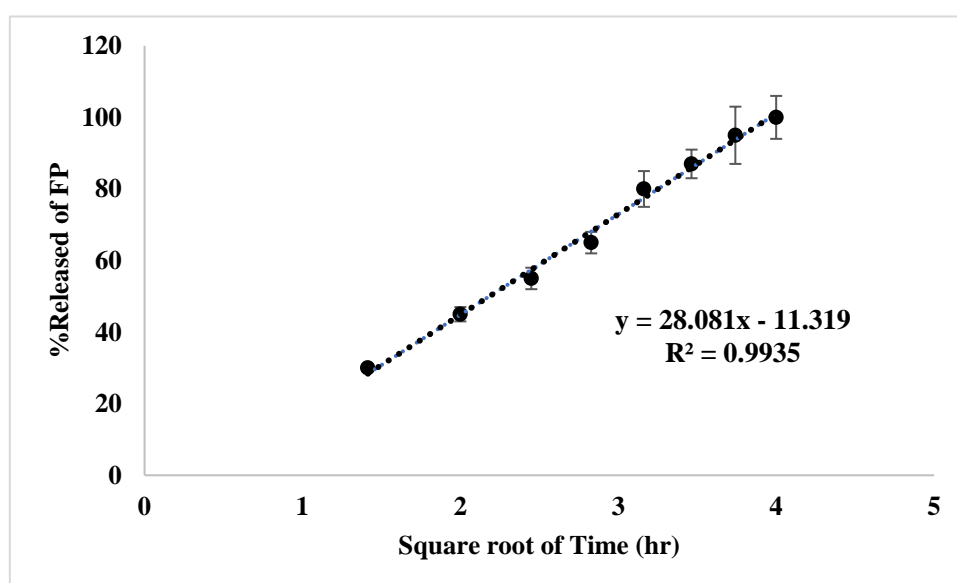
Figure S4. Linear regression of Higuchi Release Kinetics mathematical model of FP from FP-SAL-loaded Polyamide based on L-Lysine nanocapsules (F3) with the related equation, and coefficient of determination (R^2) value.
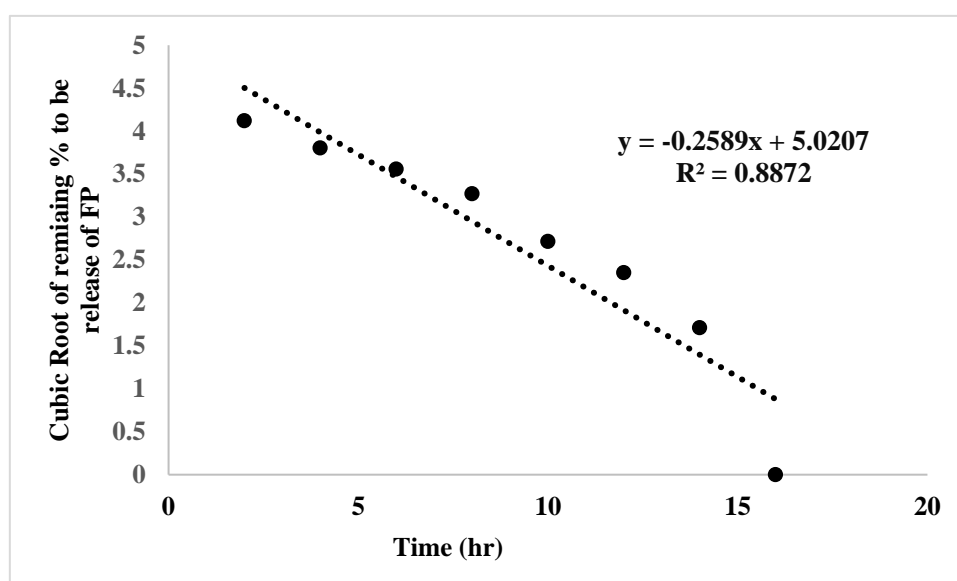

Figure S5. Linear regression of Hixon Crowell Release Kinetics mathematical model of FP from FP-SAL-loaded Polyamide based on L-Lysine nanocapsules (F3) with the related equation, and coefficient of determination (R^2) value.
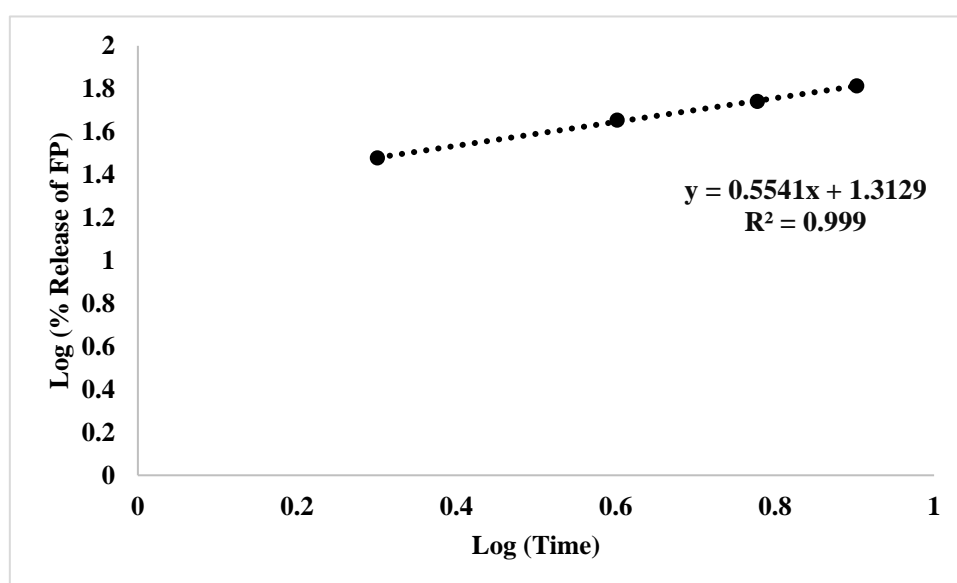
Figure S6. Linear regression of Korsmeyer -Peppas Release Kinetics mathematical model of FP from FP-SAL-loaded Polyamide based on L-Lysine nanocapsules (F3) with the related equation, and coefficient of determination (R^2) value.

Figures S7-S11 demonstrated the linear regression of the five release kinetics mathematical models for salmeterol xenofoate (SAL).
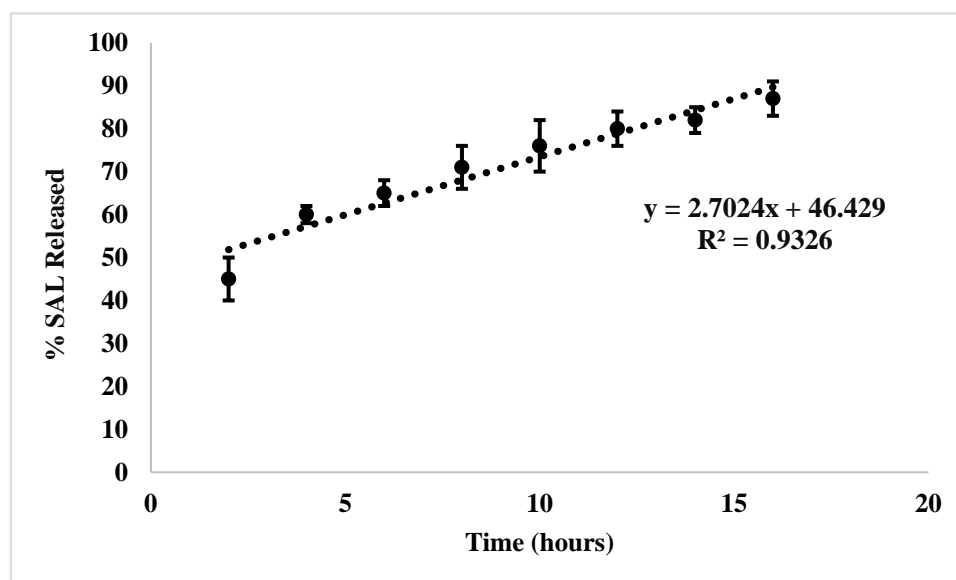

Figure S7. Linear regression of Zero Order Kinetics mathematical model of SAL from FP-SAL-loaded Polyamide based on L-Lysine nanocapsules (F3) with the related equation, and coefficient of determination (R^2) value.
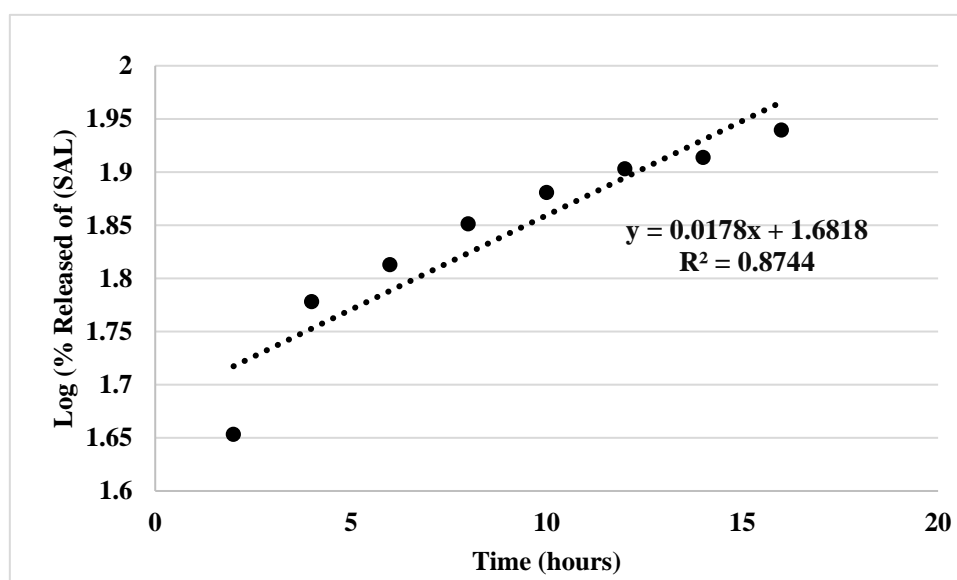

Figure S8. Linear regression of First Order Release Kinetics mathematical model of SAL from FP-SAL-loaded Polyamide based on L-Lysine nanocapsules (F3) with the related equation, and coefficient of determination (R^2) value.
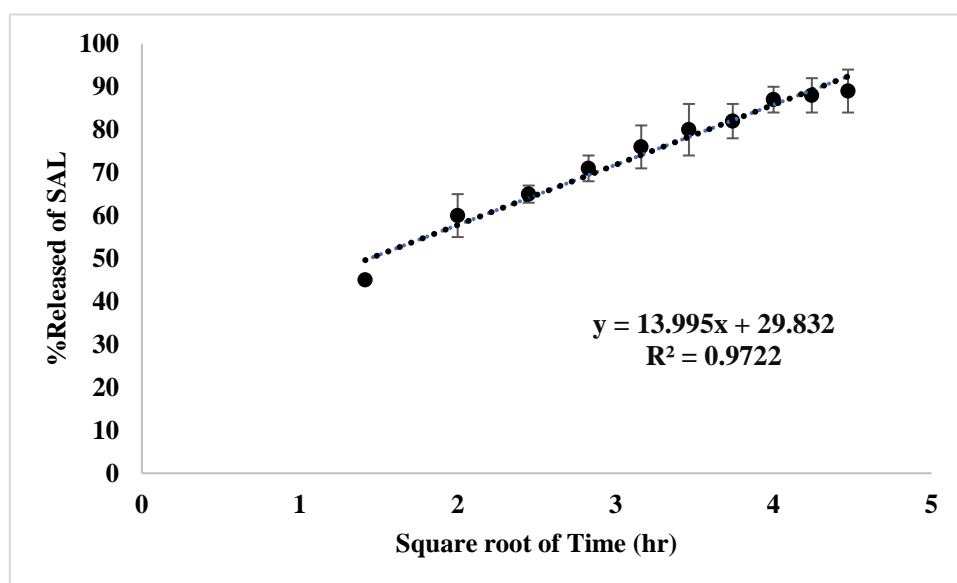
Figure S9. Linear regression of Higuchi Release Kinetics mathematical model of SAL from FP-SAL-loaded Polyamide based on L-Lysine nanocapsules (F3) with the related equation, and coefficient of determination (R^2) value.
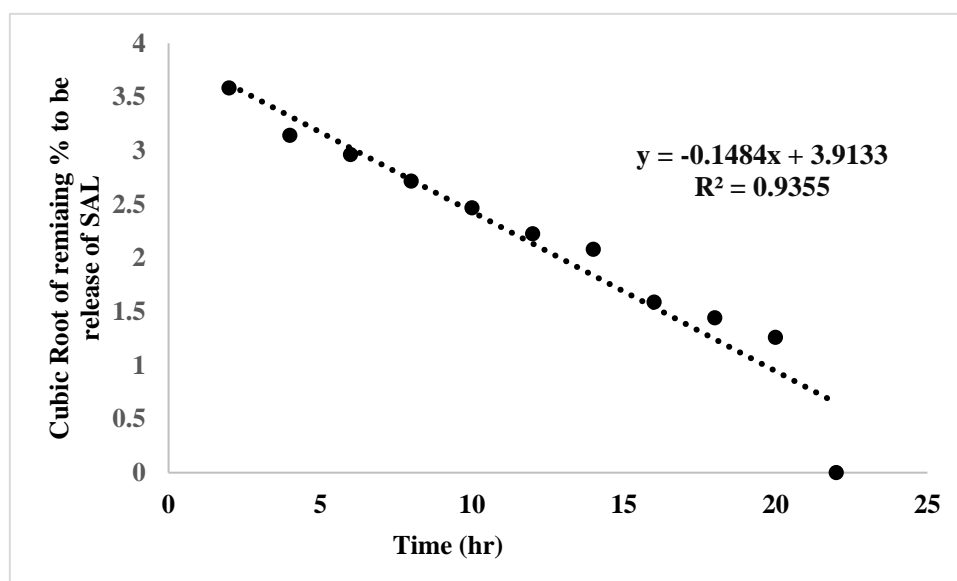

Figure S10. Linear regression of Hixon Crowell Release Kinetics mathematical model of SAL from FP-SAL-loaded Polyamide based on L-Lysine nanocapsules (F3) with the related equation, and coefficient of determination (R^2) value.
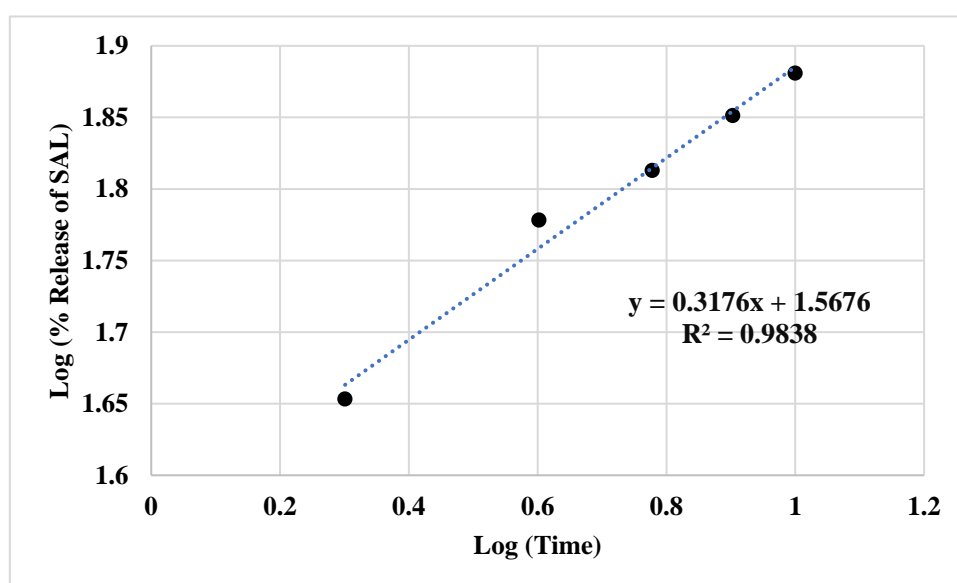
Figure S11. Linear regression of Korsmeyer -Peppas Release Kinetics mathematical model of SAL from FP-SAL-loaded Polyamide based on L-Lysine nanocapsules (F3) with the related equation, and coefficient of determination (R^2) value.
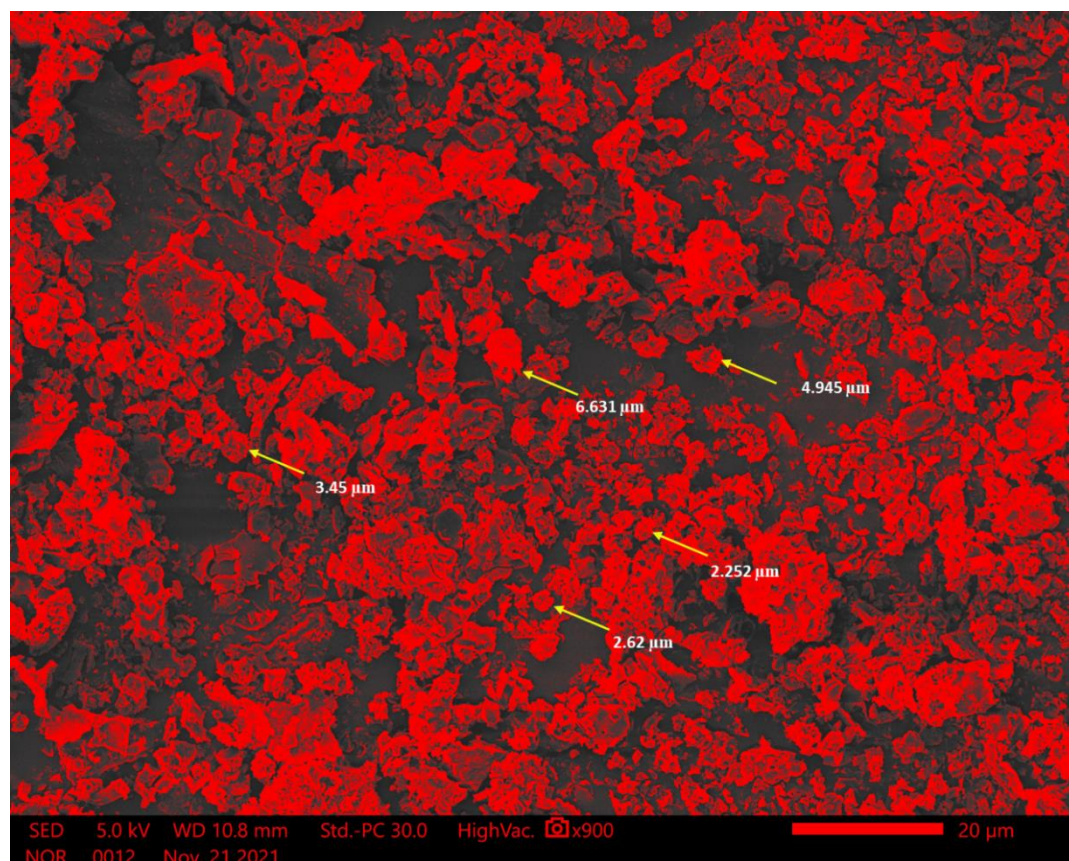
Section S3

SEM images

Figure S12. SEM micrographs of (FP-SAL/Lys-PA) NCs at 900 X magnification after image adjustment into coulor threshold using ImageJ software. Arrows highlight representative aggregates that were measured for particle size analysis.