

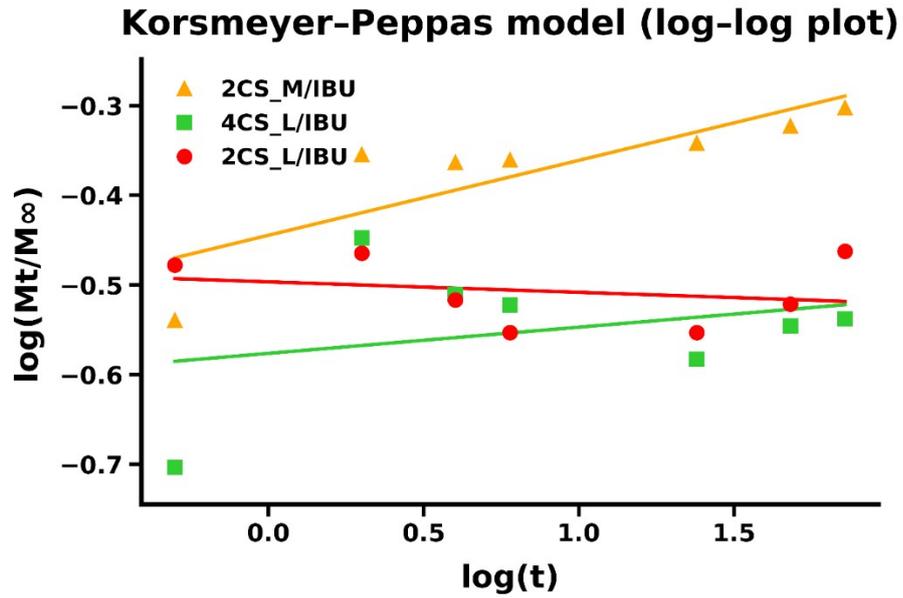
1 **Supplementary**

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3 **Table S1. The most important bands recorded in the ATR FT-IR spectra of chitosan**
4 **matrices and assigned particular components.**

Wavenumber [cm ⁻¹]	Assignment
3355	N-H (stretch.)
3280	-CONH-, OH (stretch.)
2920	CH ₂ , CH ₃ (stretch.)
2872	C-H (stretch.)
1645	C=O (Amide I)
1556	C=O (Amide II)
1420	CH ₂ (bending)
1408	C-H (def. sym.)
1375	C-N (stretch.)
1314	C-H (def. in-plane)
1254	C-H (def. in-plane)
1150	C-O (stretch.)
1056	C-O-C (ring)
1024	C-O (stretch.)
990	C-H (def. out-of-plane)
945	C-H (def. out-of-plane)
893	C-H (def. out-of-plane)
661	COO- (asym. stretch.)
556	C-C-C (def.)
514	C-N-C (bending)

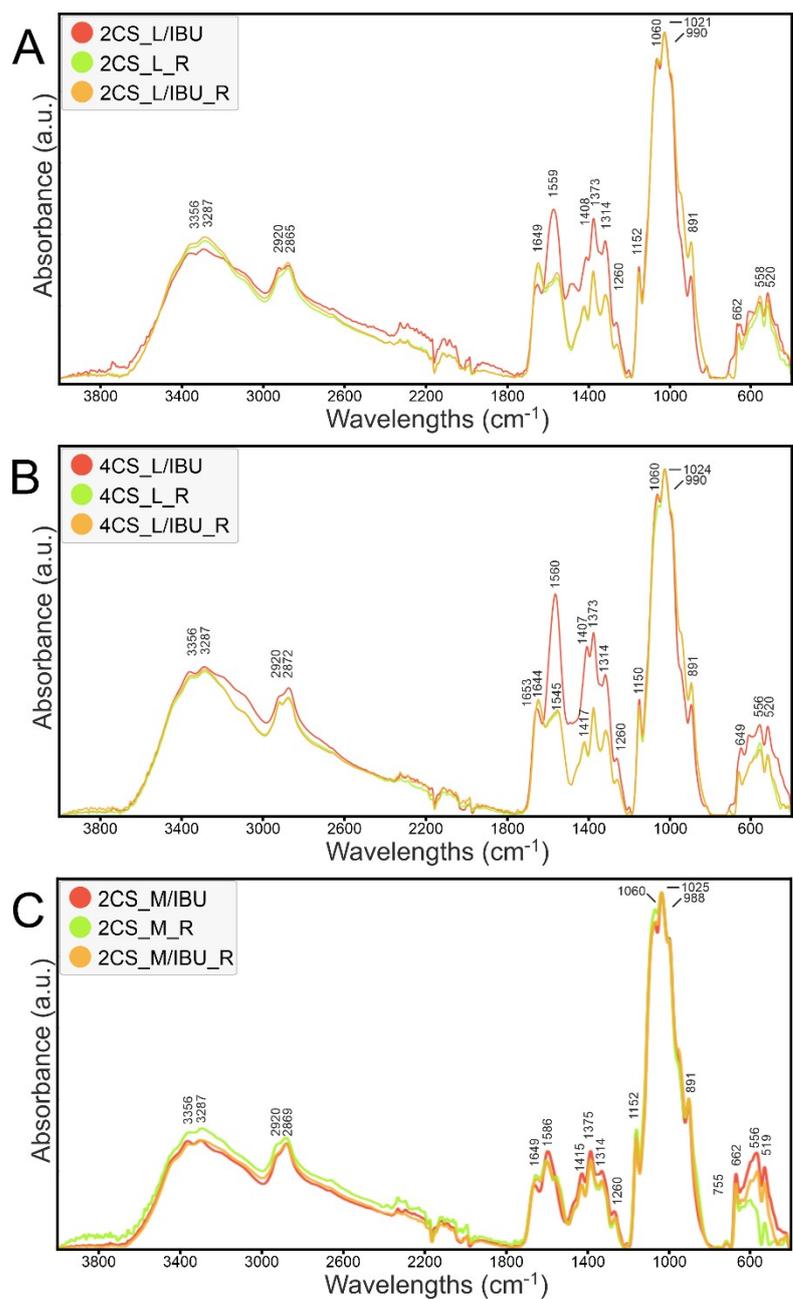
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7 Fig. S1. Korsmeyer-Peppas log-log plot of ibuprofen release from 2CS_L/IBU,
 8 4CS_L/IBU, and 2CS_M/IBU matrices ($Mt/M_\infty < 0.6$) with linear regression lines used
 9 to determine kinetic parameters (k , n) and correlation coefficients (R^2).

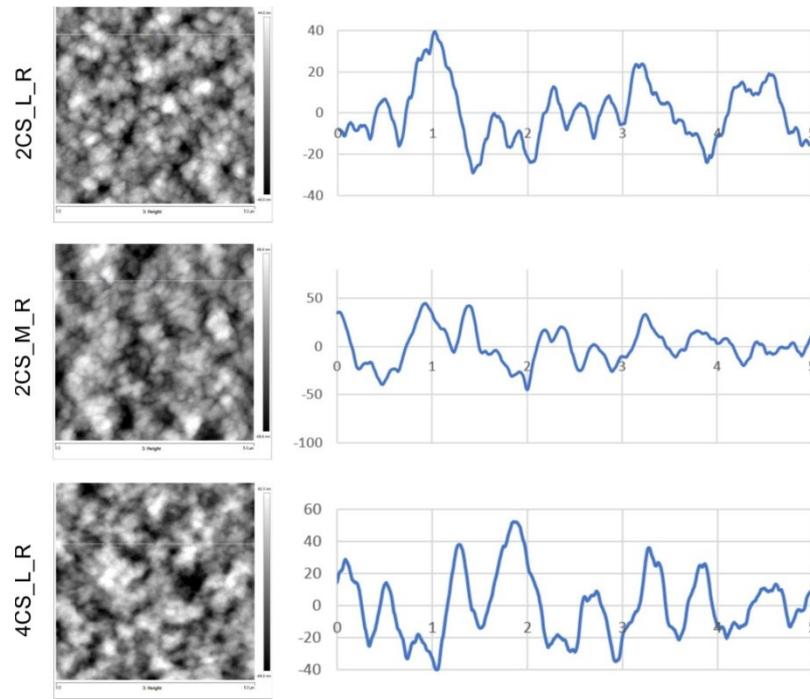
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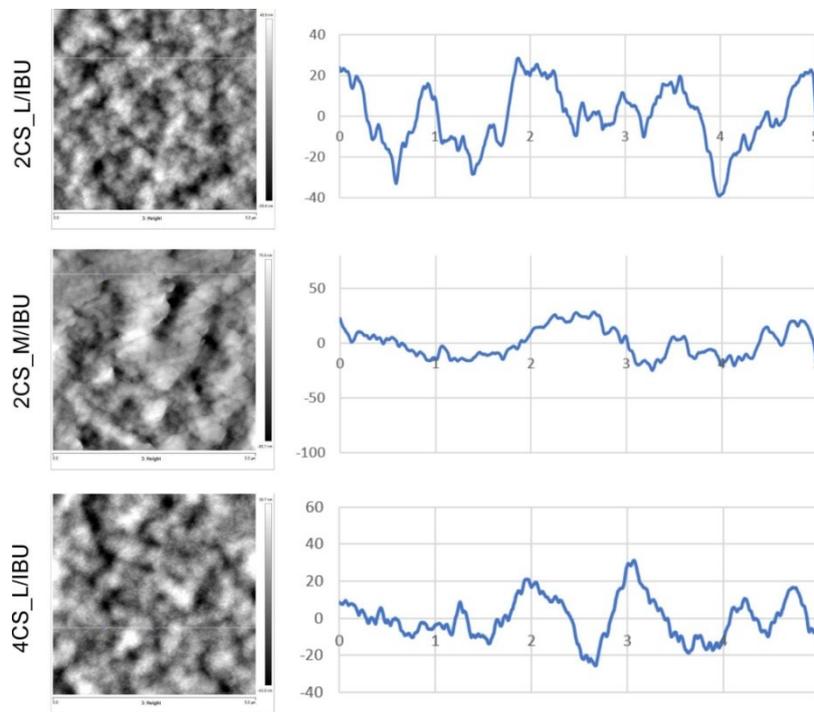
12 **Fig. S2. ATR FT-IR spectra of 2CS_L (A), 4CS_L (B), and 2CS_M (C) with and without**
 13 **ibuprofen normalized to the highest intensity band at ~1021 cm⁻¹.**

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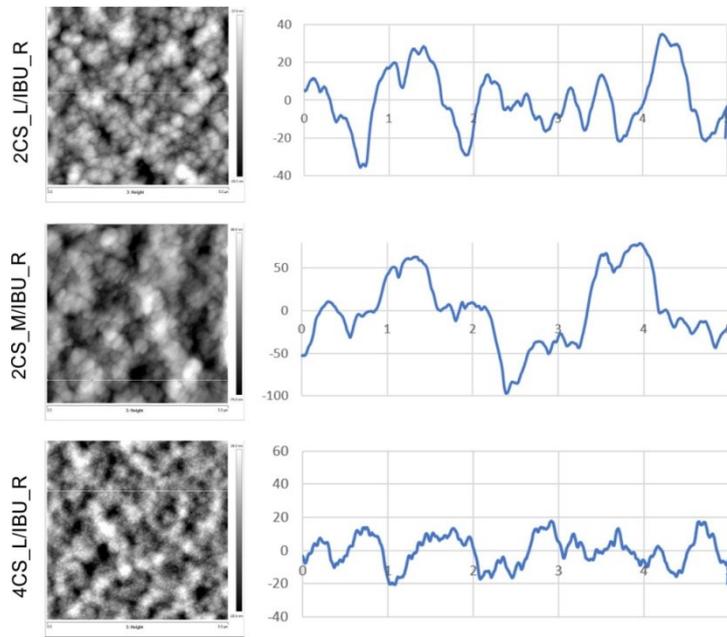
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16 **Figure S3. Linear profiles of 2CS_L_R, 2CS_M_R and 4CS_L_R surface.**



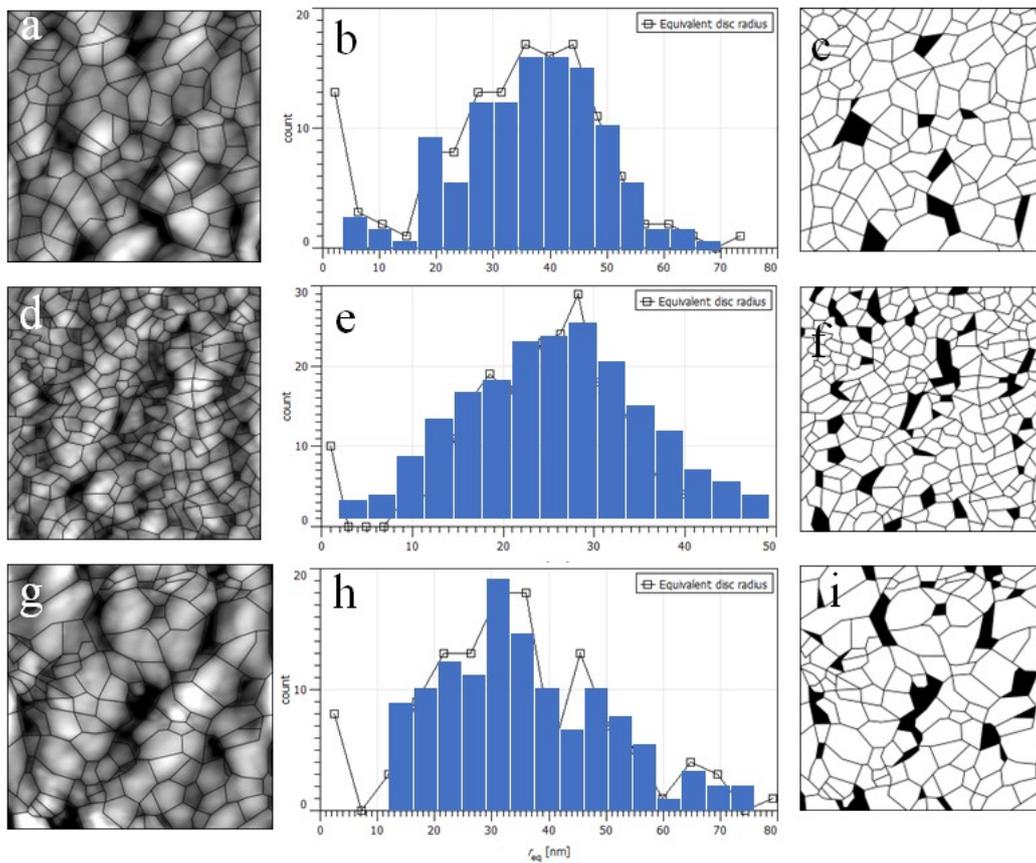
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18 **Figure S4. Linear profiles of 2CS_L/IBU, 2CS_M/IBU and 4CS_L/IBU surface.**



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20 **Figure S5. Linear profiles of 2CS_L/IBU_R, 2CS_M/IBU_R and 4CS_L/IBU_R surface.**



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22 **Fig. S6. AFM images of 2CS_L_R (a,c), 2CS_L/IBU (d, f), 2CS_L/IBU_R (g, i) and grain**
 23 **size distribution histograms (b, e, h) with specified number of grains analyzed (c, f, i);**
 24 **zoom in are 800 nm x 800 nm.**