

Type of the Paper (Article)

# Wettability of Amino Acid-functionalized PSMA Electrospun fibers for the Modulated Release of Active Agents and its Effect on their Bioactivity

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## 1. Supplementary Material

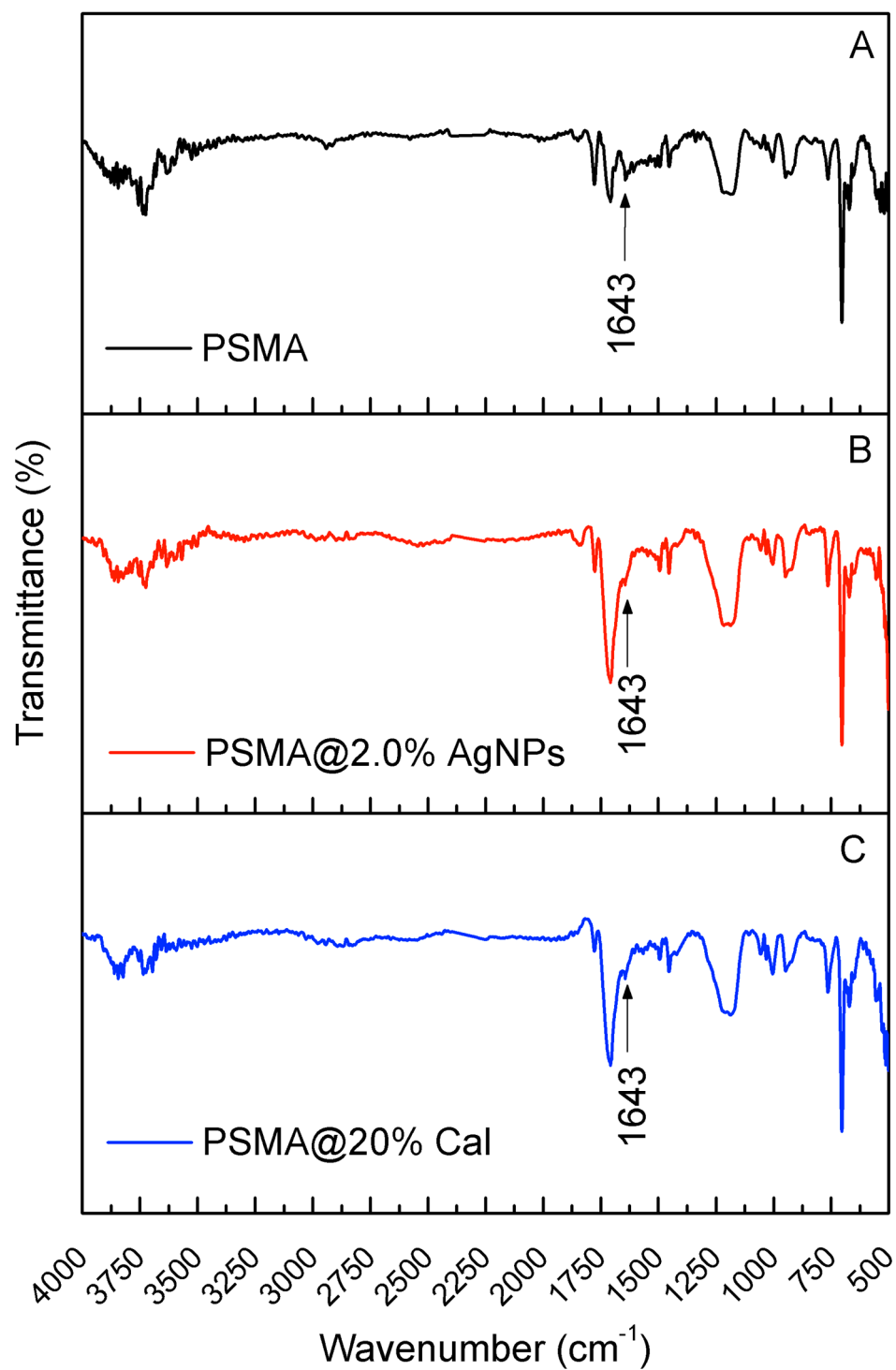


Figure S1. ATR-FTIR spectra of mats of (a) PSMA, (b) PSMA-AgNPs (2.0 wt.%) and (c) PSMA-Cal (20 wt.%).

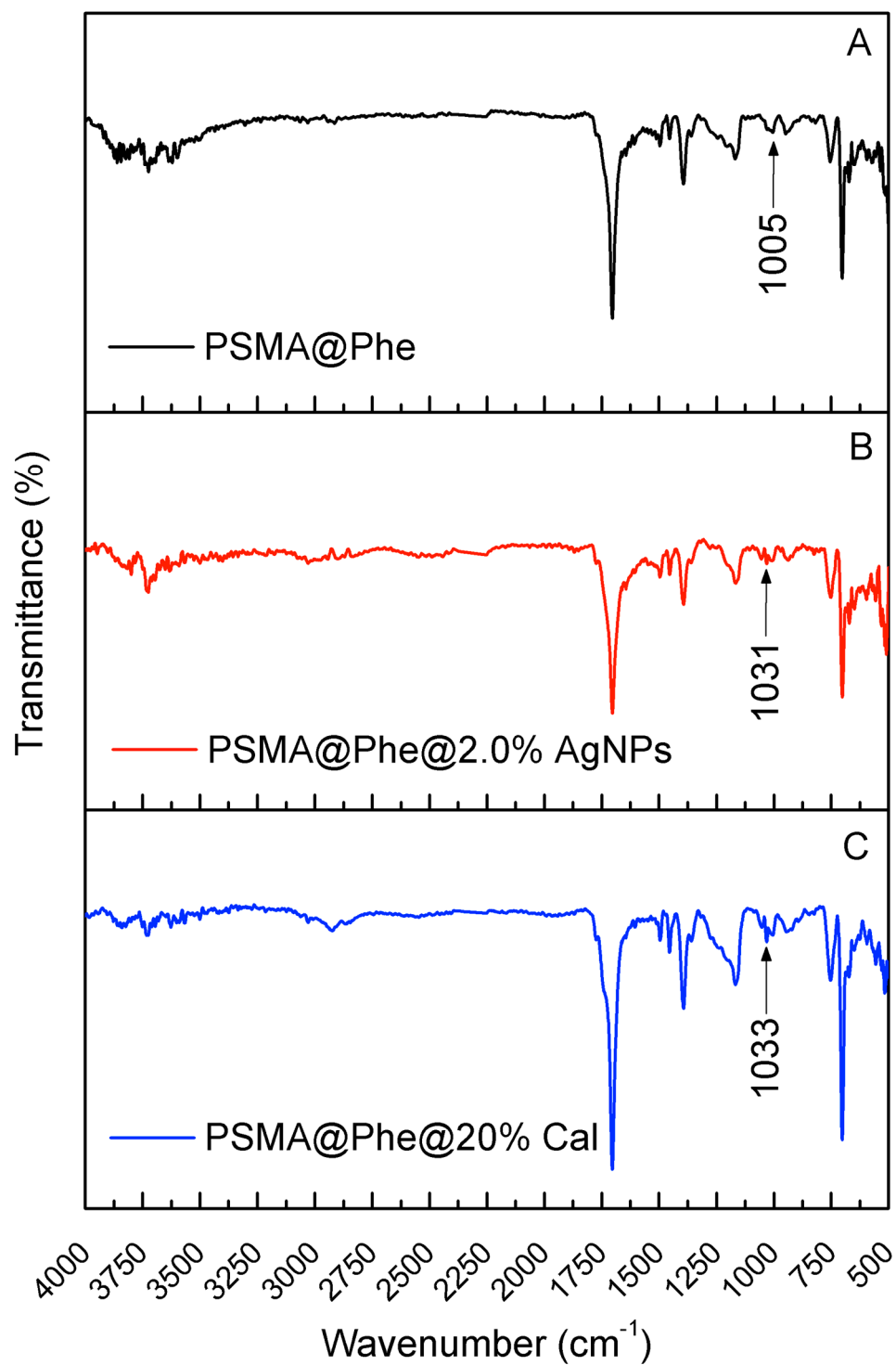


Figure S2. ATR-FTIR spectra of mats of (a) PSMA@Phe, (b) PSMA@Phe-AgNPs (2.0 wt.%) and (c) PSMA@Phe-Cal (20 wt.%).

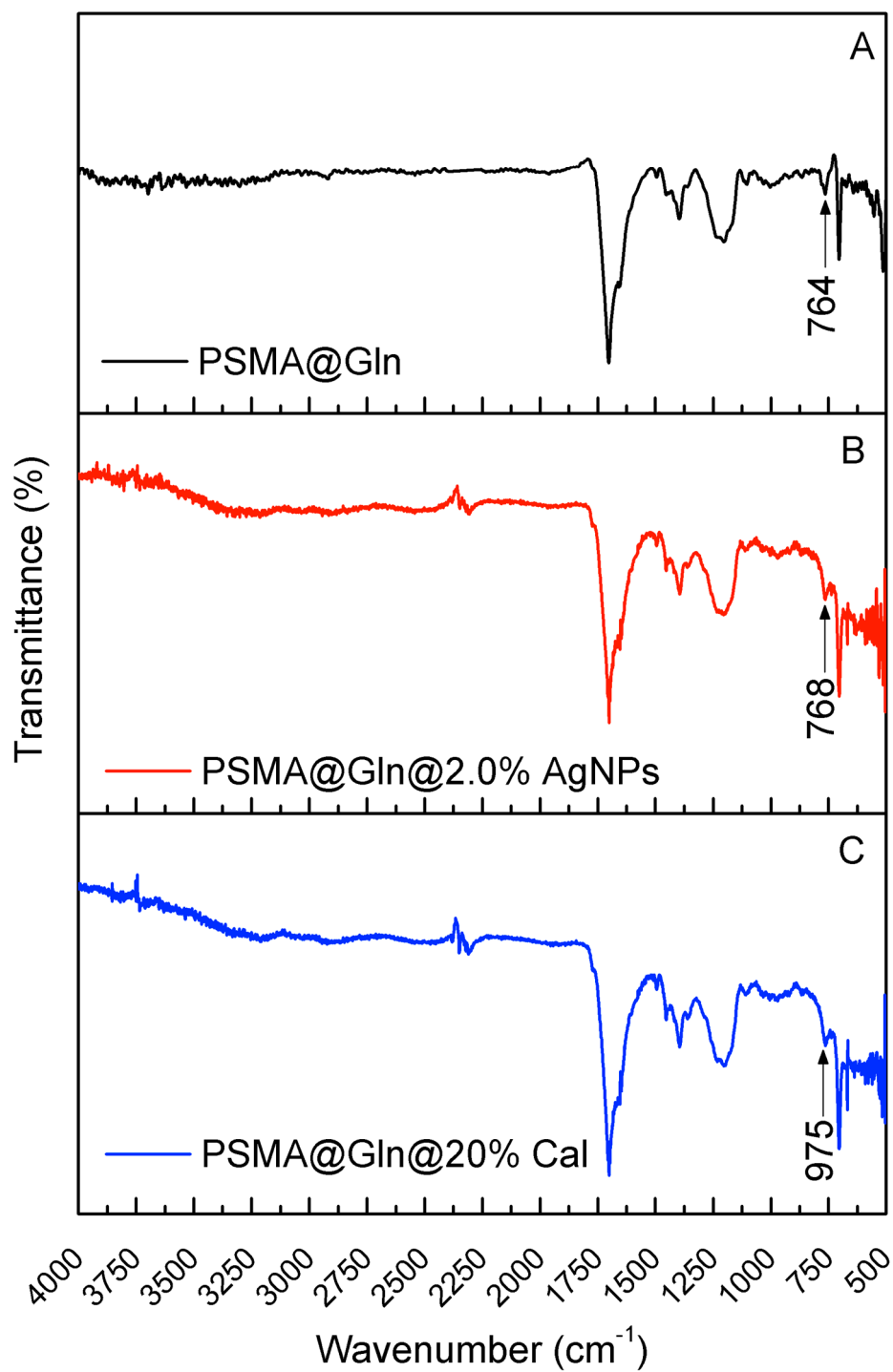


Figure S3. ATR-FTIR spectra of mats of (a) PSMA@Gln, (b) PSMA@Gln-AgNPs (2.0 wt.%) and (c) PSMA@Gln-Cal (20 wt.%).

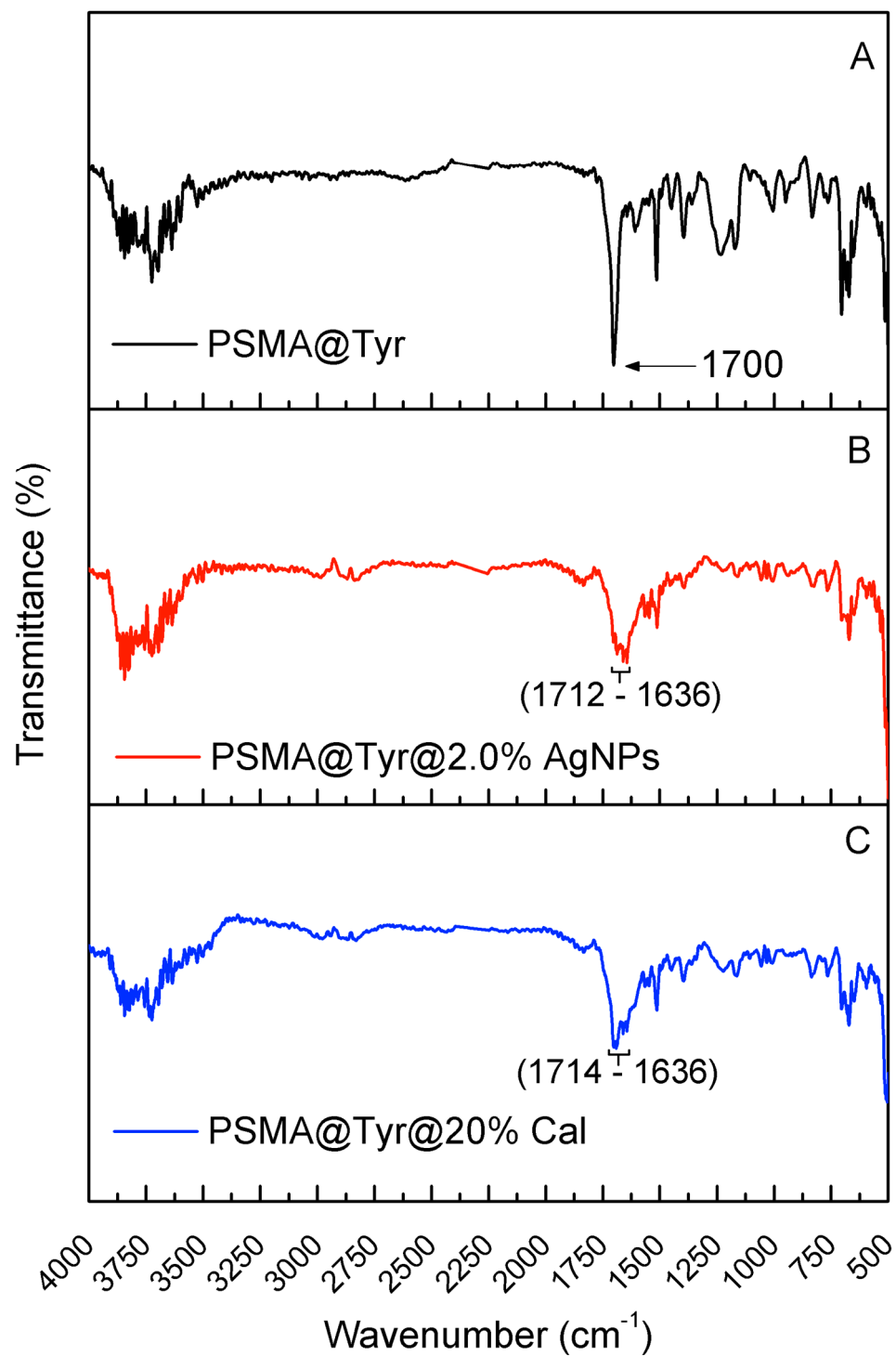
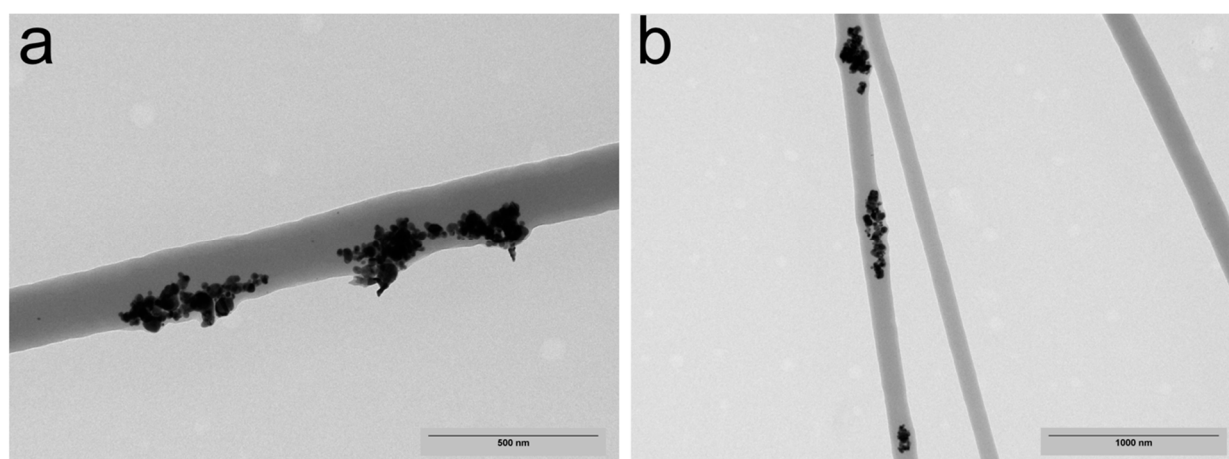


Figure S4. ATR-FTIR spectra of mats of (a) PSMA@Tyr, (b) PSMA@Tyr-AgNPs (2.0 wt.%) and (c) PSMA@Tyr-Cal (20 wt.%).



**Figure S5.** PSMA and PSMA@Phe fibers containing AgNPs aggregates. (a) PSMA 2.0 wt.%, (b) PSMA@Phe 2.0 wt.%.

**Table S1.** Advancing, receding and hysteresis contact angle of PSMA mats with different concentrations of active agent.

	Active Agent (wt.%)	Advancing contact angle (°)	Receding contact angle (°)	Hysteresis (°)
PSMA	-	132.7	116.4	16.3
	5 cal	124.6	90.3	34.3
	10 cal	133.4	124.5	8.9
	15 cal	133.5	127.2	6.3
	20 cal	134.3	125.0	9.3
	0.5 AgNPs	127.2	114.0	13.2
	1.0 AgNPs	137.6	113.1	24.5
	1.5 AgNPs	130.6	108.6	22.0
	2.0 AgNPs	123.0	106.5	16.5

**Table S2.** Advancing, receding and hysteresis contact angle of PSMA@Phe mats with different concentrations of active agent.

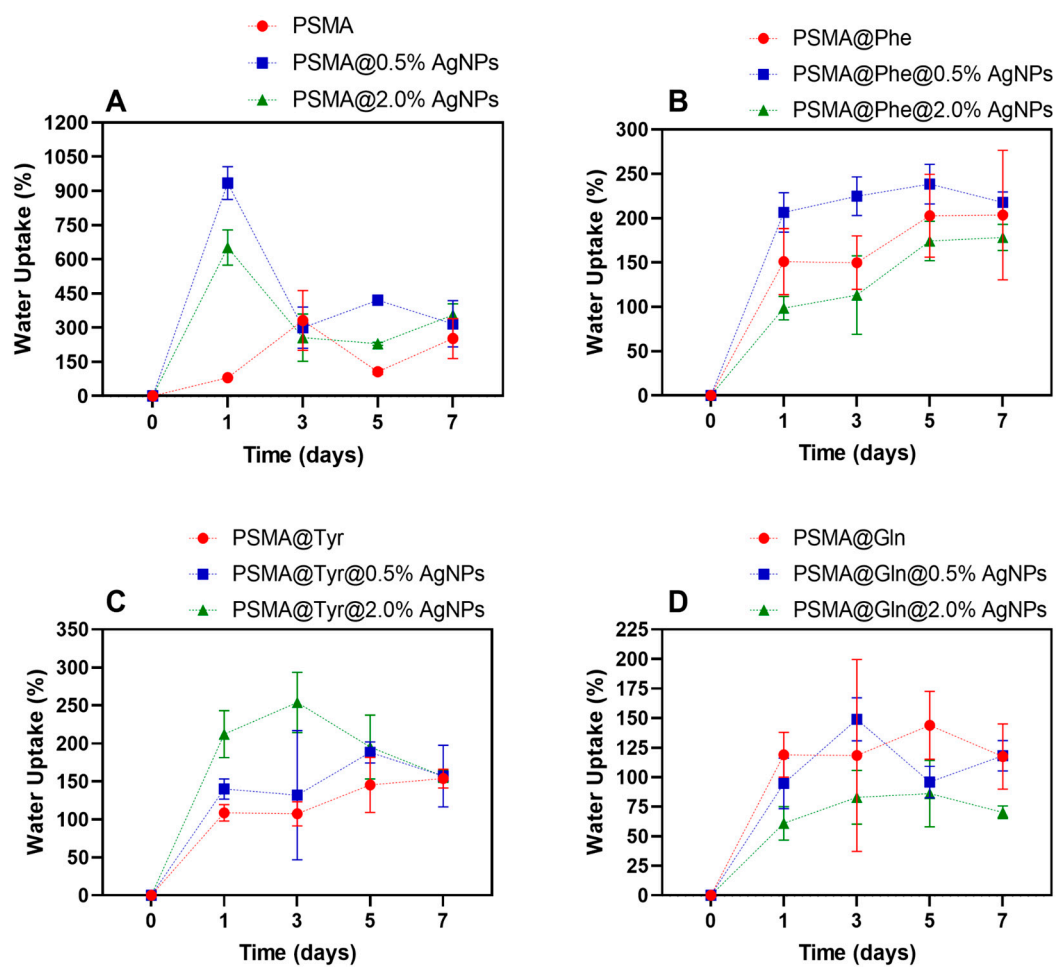
	Active Agent (wt%)	Advancing contact angle (°)	Receding contact angle (°)	Hysteresis (°)
PSMA@Phe	-	136.8	129.5	7.3
	5 cal	135.7	127.8	7.9
	10 cal	130.2	122.4	7.8
	15 cal	134.5	126.3	8.2
	20 cal	134.0	125.1	8.9
	0.5 AgNPs	130.0	120.2	9.8
	1.0 AgNPs	129.8	122.7	7.1
	1.5 AgNPs	132.1	124.9	7.2
	2.0 AgNPs	126.1	122.5	3.6

**Table S3.** Advancing, receding and hysteresis contact angle of PSMA@Tyr mats with different concentrations of active agent.

	Active Agent (wt%)	Advancing contact angle (°)	Receding contact angle (°)	Hysteresis (°)
PSMA@Tyr	-	130.4	117.9	12.5
	5 cal	127.4	114.3	13.1
	10 cal	137.4	118.0	19.4
	15 cal	130.6	119.6	11.0
	20 cal	134.1	123.1	11.0
	0.5 AgNPs	128.3	115.0	13.3
	1.0 AgNPs	77.2	34.0	43.2
	1.5 AgNPs	40.6	30.1	-
	2.0 AgNPs	135.5	65.5	70.0

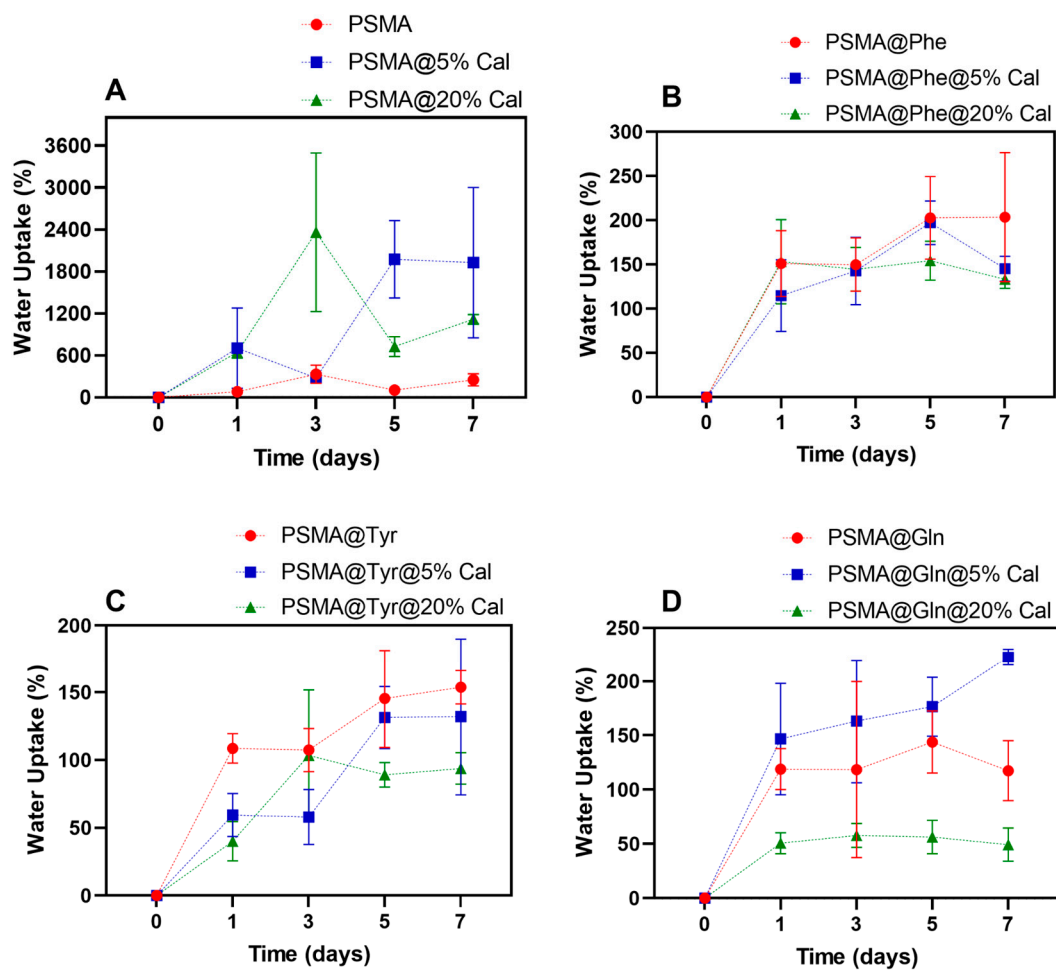
**Table S4.** Contact angle at 2 different times,  $t=0$  s and  $t=6$  s of the PSMA@Gln mats with different concentrations of active agent.

	Active Agent (wt%)	$t_0$ contact angle (°)	$t_1$ contact angle (°)
PSMA@Gln	-	28.7	25.5
	5 cal	29.7	19.8
	10 cal	41.5	28.1
	15 cal	82.6	46.0
	20 cal	32.1	26.0
	0.5 AgNPs	22.9	20.8
	1.0 AgNPs	36.2	35.6
	1.5 AgNPs	27.7	24.2
	2.0 AgNPs	32.7	28.9

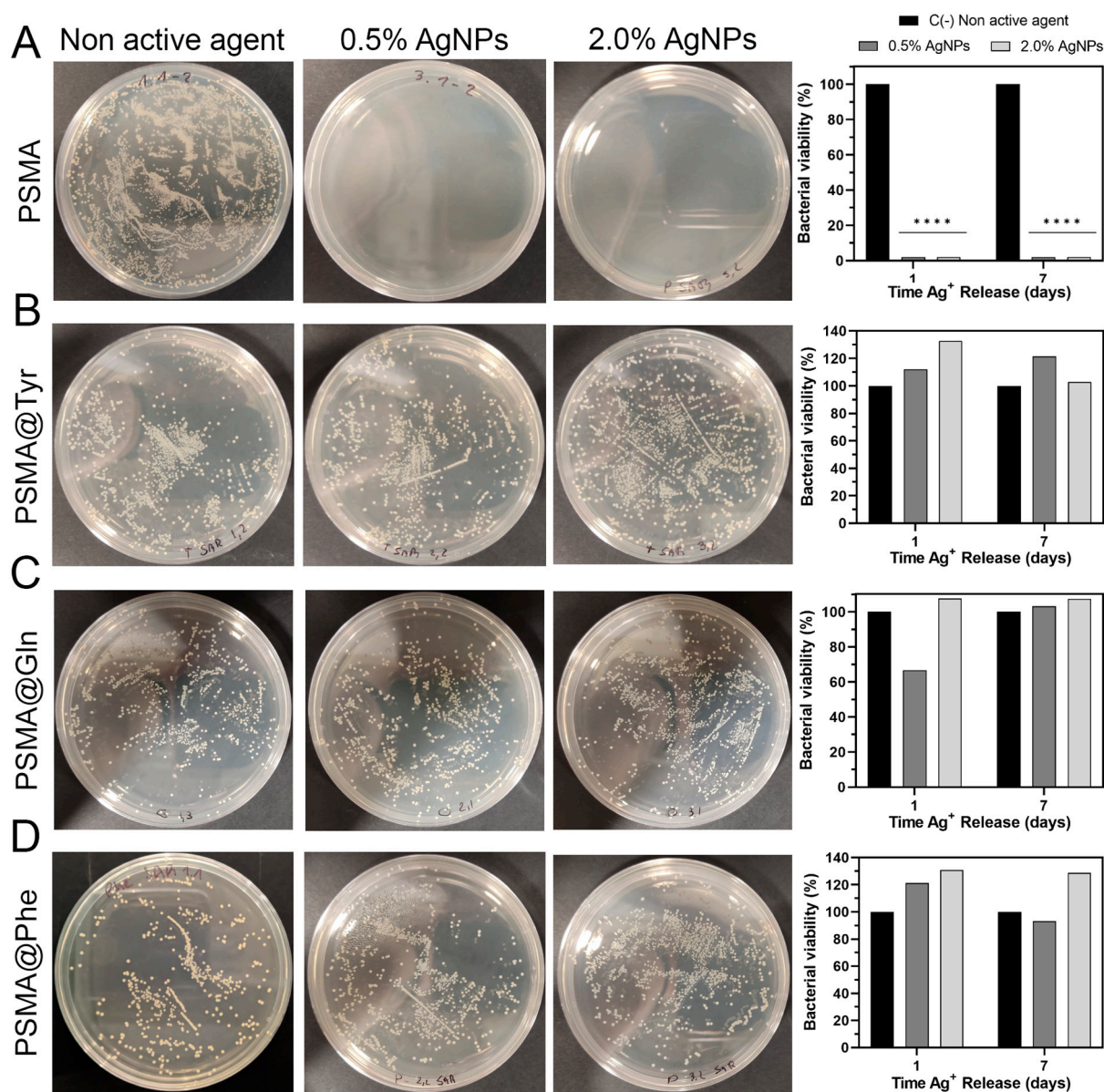


**Figure S6.** Water absorption capacity of PSMA and PSMAf containing concentrations of AgNPs at 0.5 and 2.0 wt.% (a) PSMA, (b) PSMA@Gln, (c) PSMA@Tyr and (d) PSMA@Phe.





**Figure S7.** Water absorption capacity of PSMA and PSMAf containing *C. officinalis* concentrations at 5 and 20 wt.% (a) PSMA, (b) PSMA@Gln, (c) PSMA@Tyr and (d) PSMA@Phe.



**Figure S8.** Bacterial viability of methicillin-resistant *S. aureus* ATCC 33592 incubated in release solutions of, (a) PSMA, (b) PSMA@Gln, (c) PSMA@Tyr and (d) PSMA@Phe. Data were analyzed using Dunnett's multiple comparisons test; \*\*\*\*  $P < 0.0001$  compared to the negative control group (Non-active agent).