Synthesis of Silver Nanoparticles on Polyacrylonitrile Nonwoven Substrates with the Silver Mirror Reaction for Effective SERS Detection of 4-MBA and Glucose. Supplementary Information

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Fig. S1. Mean SERS spectrum for 4-MBA (10⁻² M) on PAN (225 (15×15) single spectra per map)



Fig. S2. (a-c) Mean SERS spectrum \pm SD for 4-MBA (10⁻⁴ M) on AgNP@PAN: results of three independent substrates obtained by 1m1M procedure (3 SERS maps per substrate, 225 (15×15) single spectra per map). (d) Batch-to-batch reproducibility: averaged data across three substrates (mean spectrum \pm SD, n = 9 measurements, 3 substrates × 3 maps each).



Fig. S3. (a-c) Mean SERS spectrum \pm SD for 4-MBA (10⁻⁴ M) on AgNP@PAN: results of three independent substrates obtained by 2m05M procedure (3 SERS maps per substrate, 225 (15×15) single spectra per map). (d) Batch-to-batch reproducibility: averaged data across three substrates (mean spectrum \pm SD, n = 9 measurements, 3 substrates × 3 maps each).



Fig. S4. (a-c) Mean SERS spectrum \pm SD for 4-MBA (10⁻⁴ M) on AgNP@PAN: results of three independent substrates obtained by 2m1M procedure (3 SERS maps per substrate, 225 (15×15) single spectra per map). (d) Batch-to-batch reproducibility: averaged data across three substrates (mean spectrum \pm SD, n = 9 measurements, 3 substrates × 3 maps each).



Fig. S5. (a-c) Mean SERS spectrum \pm SD for 4-MBA (10⁻⁴ M) on AgNP@PAN: results of three independent substrates obtained by 2m2M procedure (3 SERS maps per substrate, 225 (15×15) single spectra per map). (d) Batch-to-batch reproducibility: averaged data across three substrates (mean spectrum \pm SD, n = 9 measurements, 3 substrates × 3 maps each).



Fig. S6. (a-c) Mean SERS spectrum \pm SD for 4-MBA (10⁻⁴ M) on AgNP@PAN: results of three independent substrates obtained by 2m3M procedure (3 SERS maps per substrate, 225 (15×15) single spectra per map). (d) Batch-to-batch reproducibility: averaged data across three substrates (mean spectrum \pm SD, n = 9 measurements, 3 substrates × 3 maps each).



Fig. S7. (a-c) Mean SERS spectrum \pm SD for 4-MBA (10⁻⁴ M) on AgNP@PAN: results of three independent substrates obtained by 2m4M procedure (3 SERS maps per substrate, 225 (15×15) single spectra per map). (d) Batch-to-batch reproducibility: averaged data across three substrates (mean spectrum \pm SD, n = 9 measurements, 3 substrates × 3 maps each).



Fig. S8. (a-c) Mean SERS spectrum \pm SD for 4-MBA (10⁻⁴ M) on AgNP@PAN: results of three independent substrates obtained by 3m1M procedure (3 SERS maps per substrate, 225 (15×15) single spectra per map). (d) Batch-to-batch reproducibility: averaged data across three substrates (mean spectrum \pm SD, n = 9 measurements, 3 substrates × 3 maps each).



Fig. S9. (a-c) Mean SERS spectrum \pm SD for 4-MBA (10⁻⁴ M) on AgNP@PAN: results of three independent substrates obtained by 4m1M procedure (3 SERS maps per substrate, 225 (15×15) single spectra per map). (d) Batch-to-batch reproducibility: averaged data across three substrates (mean spectrum \pm SD, n = 9 measurements, 3 substrates × 3 maps each).



Fig. S10. Optical microscopy of cells cultured in the presence of 2m1M substrates. Scale bar is 100 $\mu m.$

2m1M samples

control PAN



Fig. S11. S. aureus growth inhibition after 24 h incubation with non-woven material samples: (a) complete, (b) partial. Scale bar: 5 mm