

Article

Cellulose/Zeolitic Imidazolate Framework (ZIF-8) Composites with Antibacterial Properties for the Management of Wound Infections

Valentina Di Matteo ¹, Maria Francesca Di Filippo ², Barbara Ballarin ^{1,3,4}, Giovanna Angela Gentilomi ^{5,6}, Francesca Bonvicini ^{5,*}, Silvia Panzavolta ^{2,4} and Maria Cristina Cassani ^{1,7,*}

¹ Department of Industrial Chemistry “Toso Montanari”, University of Bologna, Viale del Risorgimento 4, 40136 Bologna, Italy; valentina.dimatteo5@unibo.it (V.D.M.); barbara.ballarin@unibo.it (B.B.)

² Department of Chemistry “G. Ciamician”, University of Bologna, Via Selmi 2, 40126 Bologna, Italy; maria.difilippo5@unibo.it (M.F.D.F.); silvia.panzavolta@unibo.it (S.P.)

³ Center for Industrial Research—Fonti Rinnovabili, Ambiente, Mare e Energia CIRI FRAME, University of Bologna, Viale del Risorgimento 2, 40136 Bologna, Italy

⁴ Center for Industrial Research—Advanced Applications in Mechanical Engineering and Materials Technology CIRI MAM, University of Bologna, Viale del Risorgimento 2, 40136 Bologna, Italy;

⁵ Department of Pharmacy and Biotechnology, University of Bologna, Via Massarenti 9, 40138, Italy; giovanna.gentilomi@unibo.it (G.A.G.)

⁶ Microbiology Unit, IRCCS Azienda Ospedaliero-Universitaria di Bologna, Via Massarenti 9, 40138 Bologna, Italy

⁷ Health Sciences and Technologies—Interdepartmental Center for Industrial Research (HST-ICIR), Alma Mater Studiorum—University of Bologna, 40064 Ozzano dell’Emilia, Bologna, Italy

* Correspondence: francesca.bonvicini4@unibo.it (F.B.); maria.cassani@unibo.it (M.C.C.)

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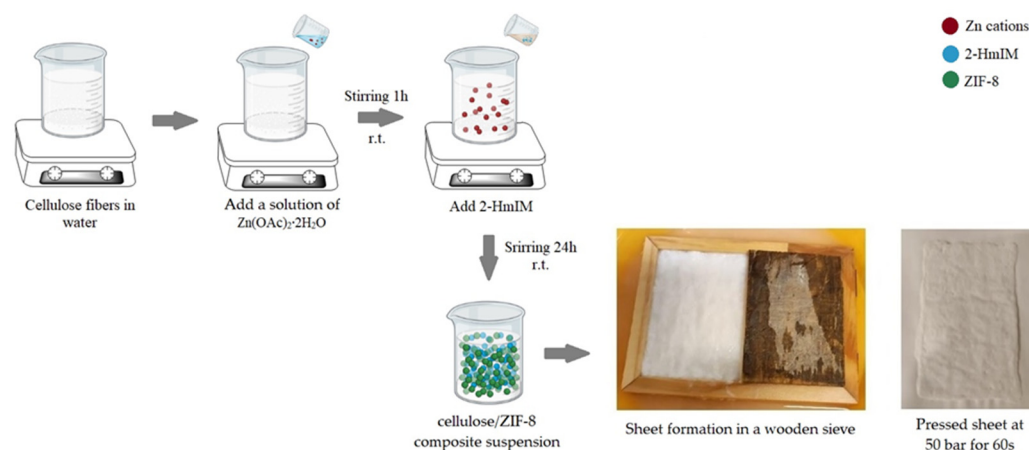


Figure S1. Schematic representation (done with “BioRender”) of the Cell@ZIF-8 samples synthesis.

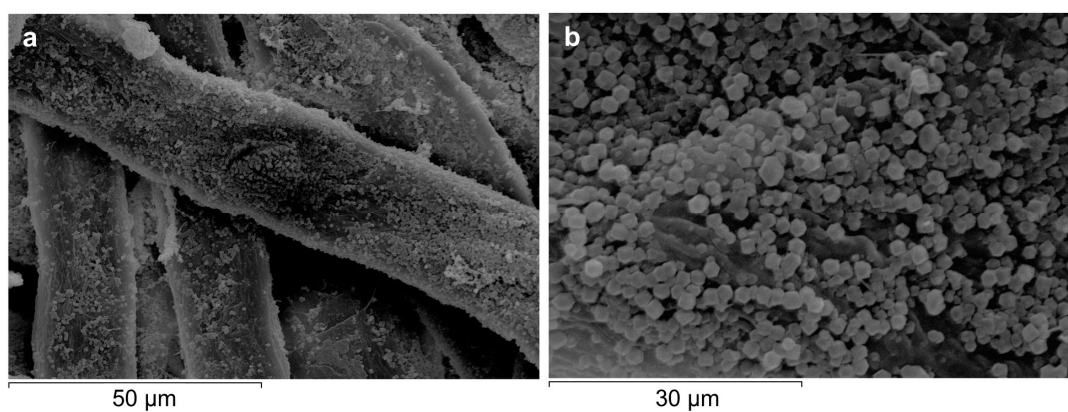


Figure S2. SEM image of the *activated* Cell2@ZIF-8 sample at different scales: a) 50 and b) 30 μm).

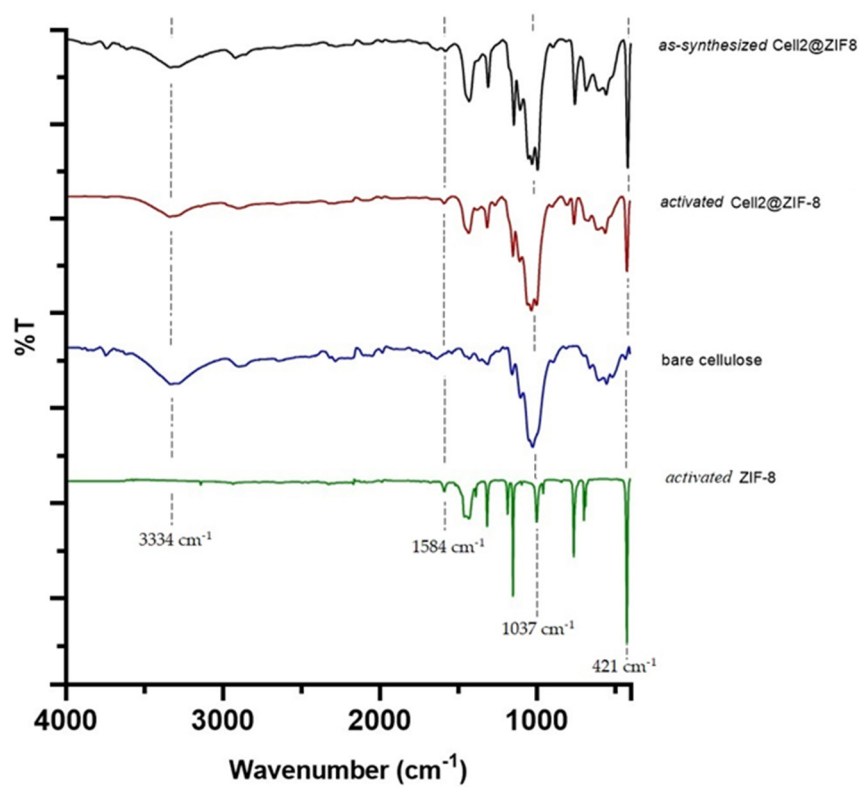


Figure S3. Comparison between the IR spectra of the bare cellulose, Cell2@ZIF-8 and pure ZIF-8 samples.

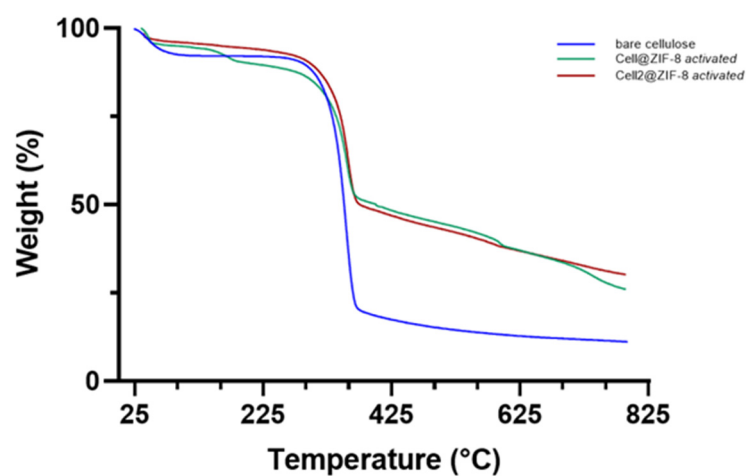


Figure S4. Comparison between the thermograms of bare cellulose (blue), *activated* Cell@ZIF-8 (green) and *activated* Cell2@ZIF-8 (red) samples.

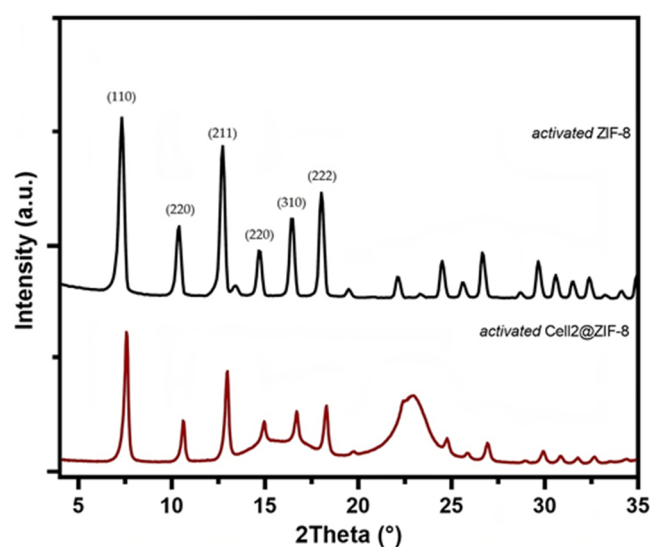


Figure S5. XRD diffractograms of *activated* Cell2@ZIF-8 (red) and pure ZIF-8 (black).

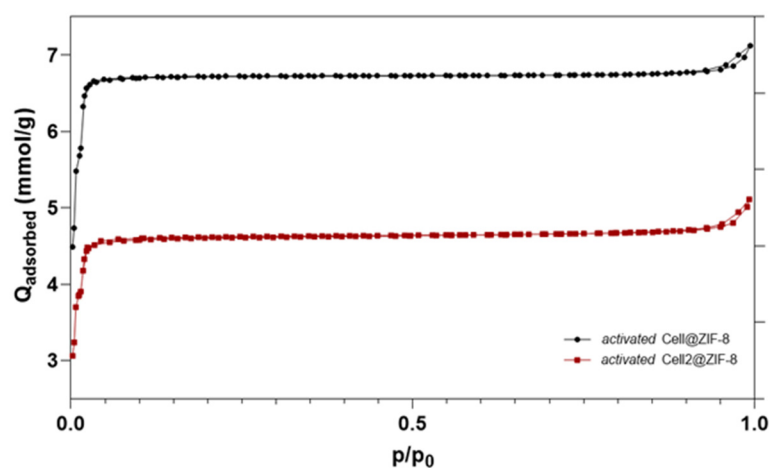


Figure S6. Adsorption and desorption isotherms of *activated* Cell@ZIF-8 (black) and *activated* Cell2@ZIF-8 (red) samples.

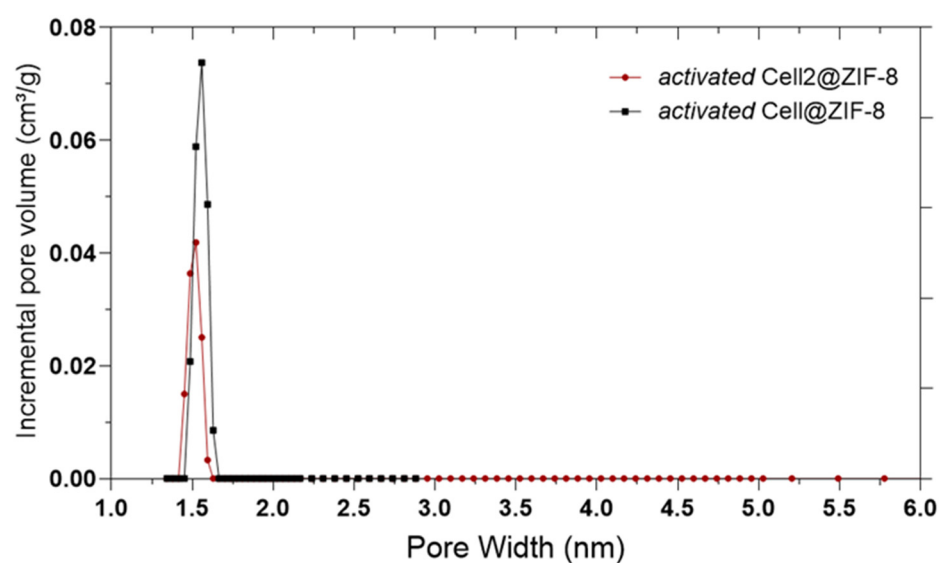


Figure S7. Incremental Pore Volume distribution obtained by using DFT of *activated* Cell@ZIF-8 and *activated* Cell2@ZIF-8 samples. The integral of these curves is the total pore volume reported in Table 2.

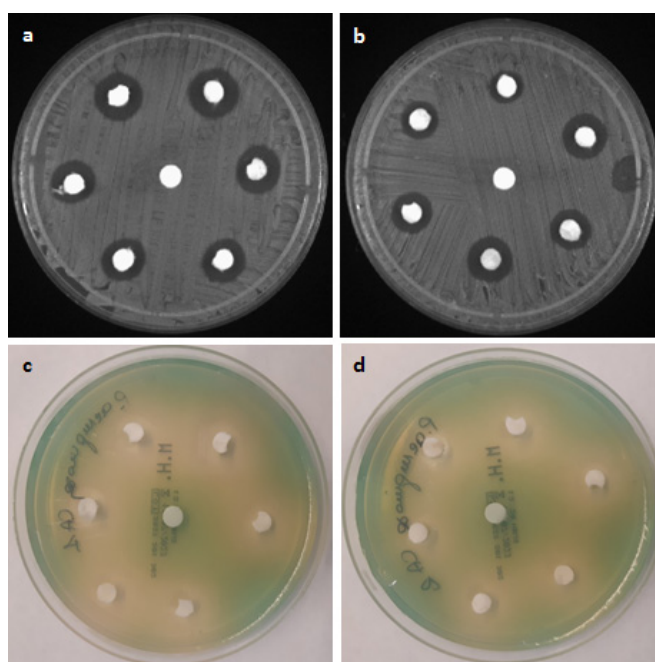


Figure S8. Representative pictures of the disk-diffusion tests on *S. epidermidis* with *activated* Cell@ZIF-8 (a) and Cell2@ZIF-8 samples (b) and on *P. aeruginosa* with *activated* Cell@ZIF-8 (c) and Cell2@ZIF-8 samples (d). Six replicates of each sample and a cellulose bare sample (in the middle of the plate) are tested on the same bacterial suspension to measure the intra-assay variability of the materials.

Table S1. Antibacterial activity determined with the standardized disk-diffusion test. The diameters of the inhibition zone are expressed in millimeters (mm).

Reference strains	Bare cellulose	Cell@ZIF-8 <i>as-synthesized</i>	Sterile paper disk	GNT 10 µg	VNC 10 µg
<i>S. aureus</i> ATCC 25923	NA ¹	9 ± 1	NA	18 ± 1	14 ± 1
<i>S. epidermidis</i> ATCC 12228	NA	15 ± 1	NA	22 ± 1	15 ± 1
<i>E. coli</i> ATCC 25922	NA	8 ± 1	NA	19 ± 1	NA
<i>P. aeruginosa</i> ATCC 27853	NA	13 ± 1	NA	18 ± 1	NA

¹NA: Not appeared**Table S2.** Antibacterial activity determined with the agar-cup method. The diameters of the inhibition zone are expressed in millimeters (mm).

Reference strains	<i>S. epidermidis</i>	<i>P. aeruginosa</i>
undiluted ZIF-8 powder <i>as-synthesized</i>	19 ± 1	20 ± 1
ten-fold diluted ZIF-8 powder <i>as-synthesized</i>	13 ± 1	13 ± 1
undiluted ZIF-8 powder <i>activated</i>	19 ± 1	20 ± 1
ten-fold diluted ZIF-8 powder <i>activated</i>	13 ± 1	13 ± 1