

ELECTRONIC SUPPLEMENTARY INFORMATION

Biomolecular Corona Formation: Nature and Bactericidal Impact on Surface-Modified Silica Nanoparticles

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1) SEM and DLS based size distributions

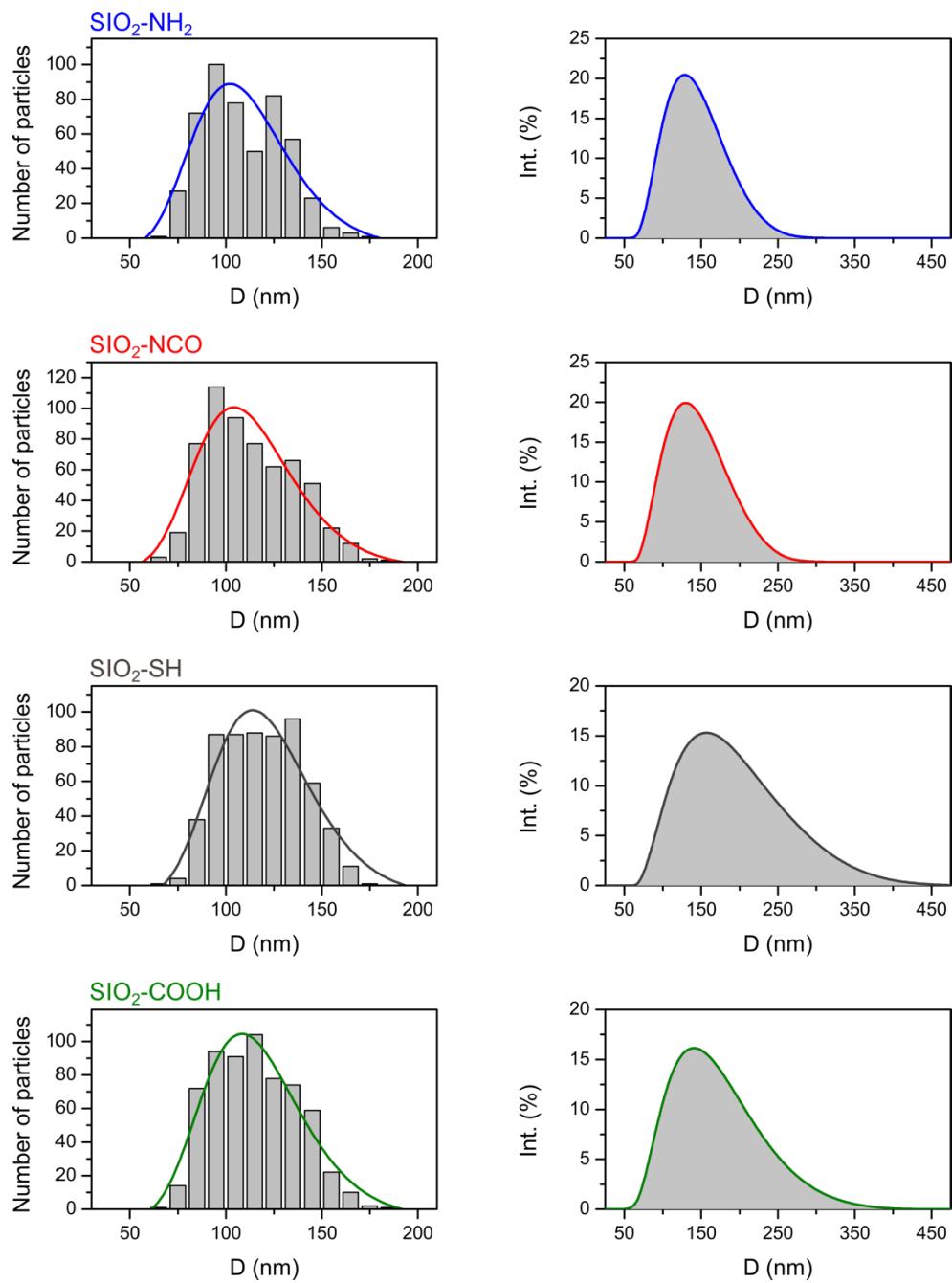


FIGURE S1. SEM based (left) and DLS based (right) size distributions of the nano- particles under study.

2) TGA and N₂ Adsorption/Desorption isotherms

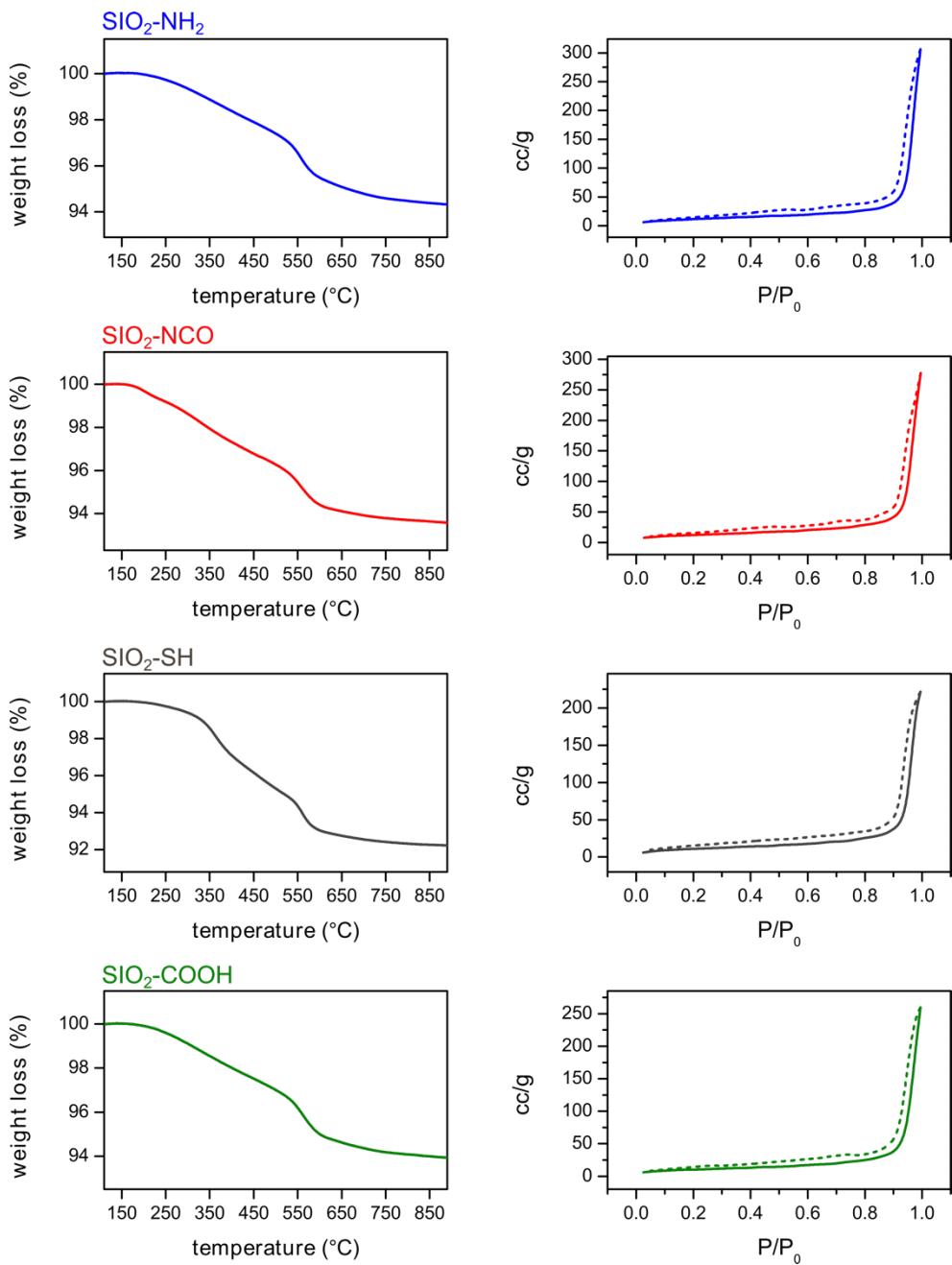


FIGURE S2. TGA (left) and N₂ adsorption/desorption isotherms (right; adsorption is represented with solid lines while desorption with dashed lines) of the nanoparticles under study. All the samples presented isotherms of type II with H1-type hysteresis loops.¹ This kind of behavior is commonly observed in materials constituted by agglomerates (or clusters) of relatively uniform spheres. In such structures, H1-type hysteresis loop can arise from the interstice (in the micro and meso-range) shaped between the primary nuclei.²

3) Luria-Bertani (LB) medium composition

Luria-Bertani Broth (also called Luria Broth or Lysogeny Broth)³ is a widely used medium to grow bacterial cultures which provides several nutrients. It is easily prepared by mixing 10g of tryptone, 5g of yeast extract and 5g (LB Lennox) or 10g (LB Miller) of NaCl in 1L of distilled water and adjusting the pH to 7 with NaOH 1N. The Miller version was used for this work. It is important to note that LB is a complex and undefined media which may vary among different batches, and distributors.

The tryptone is pancreatic digest of casein (from cow's milk) while the yeast extract is an autodigest of *Saccharomyces cerevisiae*. Since, these two components are enzymatic digest they are mostly composed of oligopeptides.^{4,5} The total nitrogen content is around 12-13% (3-5% amino nitrogen) in the tryptone and ~10% (~5% amino nitrogen) in the yeast extract (data provided by the distributor, Kasvi).

As mentioned above, amino acids are mainly present in the form of oligopeptides. The 20 natural amino acids (constituting peptides or free) are found in LB at different concentrations in the mM range.^{4,6}

Carbohydrates (arabitol, arabinose, lactose, and maltose among others) are present at trace levels (μ M range).^{4,6,7}

Nucleosides/Nucleotides (inosine, thymidine, uracyl, uridine, adenosine, among others) are present at mM levels. Bioassay-based determinations have estimated values of 0.3 mM for purines and 0.2 mM for pyrimidines.^{4,8}

Finally, it is important to mention that LB is rich in some B vitamins (B2, B3, B5, B9; provided by the yeast extract) and several inorganic ions (such as sodium, potassium, magnesium, calcium, zinc, selenium, sulfate, phosphate, chloride, among others; in very different concentration ranges).^{3,8}

4) References

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