

Self-Assembled Lanthanum Hydroxide Microspheres within a Reaction-Diffusion Framework: Synthesis, Characterization, Control and Application

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Electronic Supporting Information

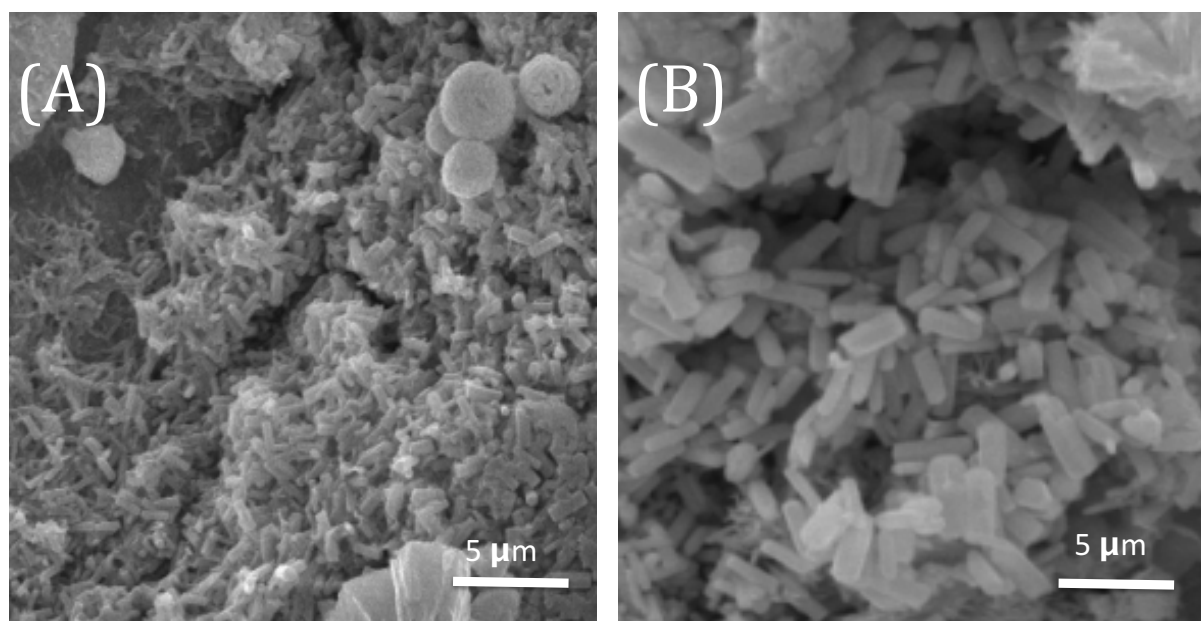


Figure S1: SEM images of rod-like structure of lanthanum hydroxide close to the gel-outer electrolyte interface. (A) $[La(III)] = 200$ mM; (B) $[La(III)] = 500$ mM.

Increasing concentration of inner electrolyte (50 mM,200 mM,500

Moving away from the interface

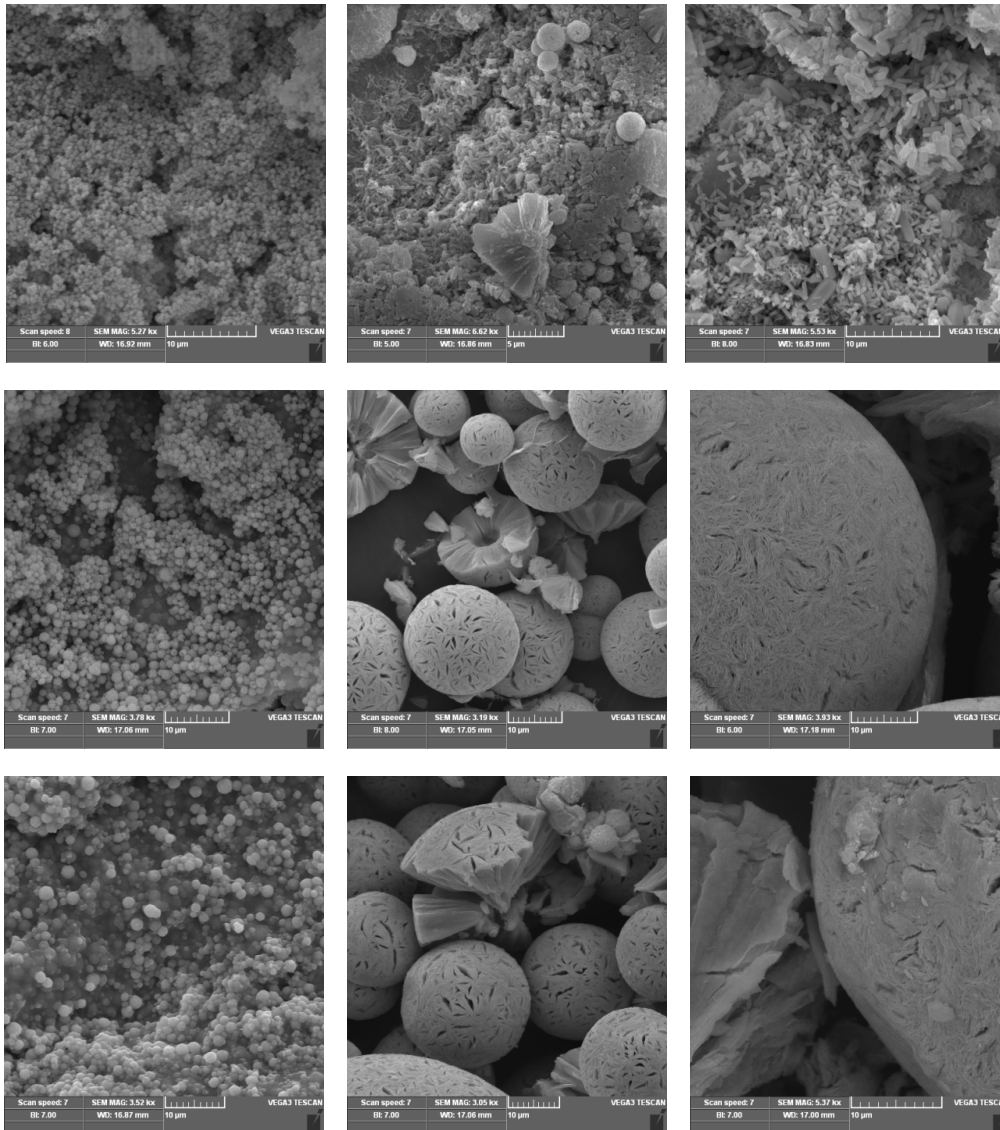


Figure S2. SEM images of $\text{La}(\text{OH})_3$ particles showing the dependence of particle size and morphology on the inner concentration of La^{3+} ($[\text{La}^{3+}] = 50, 200, 500 \text{ mM}$) in 1 % agar with fixed outer concentration of 14.8 M ammonia.

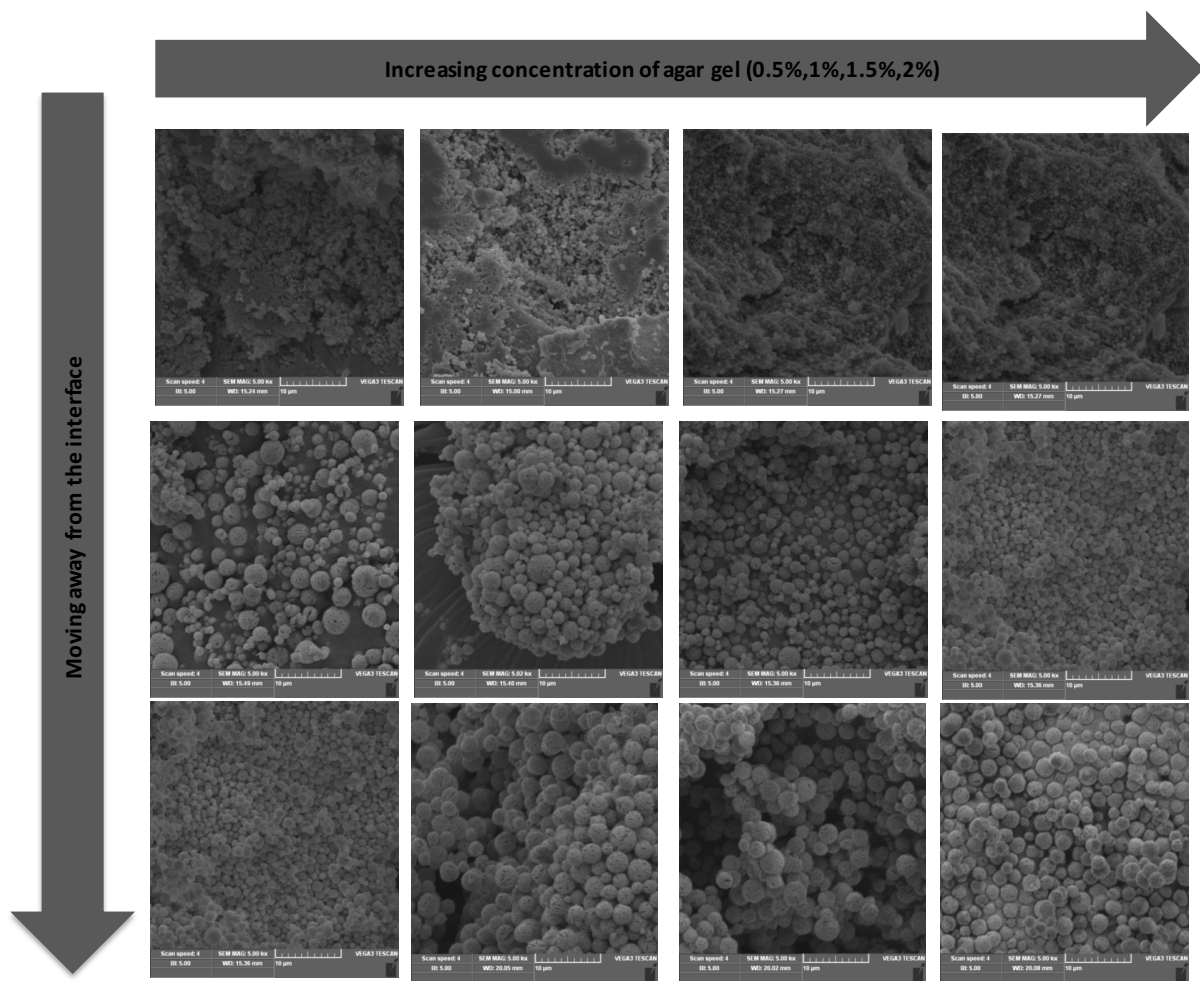


Figure S3. SEM images of La(OH)₃ particles showing the dependence of particle size on the thickness of agar gel (0.5%, 1%, 1.5%, 2%) with fixed inner concentration of La³⁺ ([La³⁺]=50 mM) and outer concentration of 14.8 M ammonia.

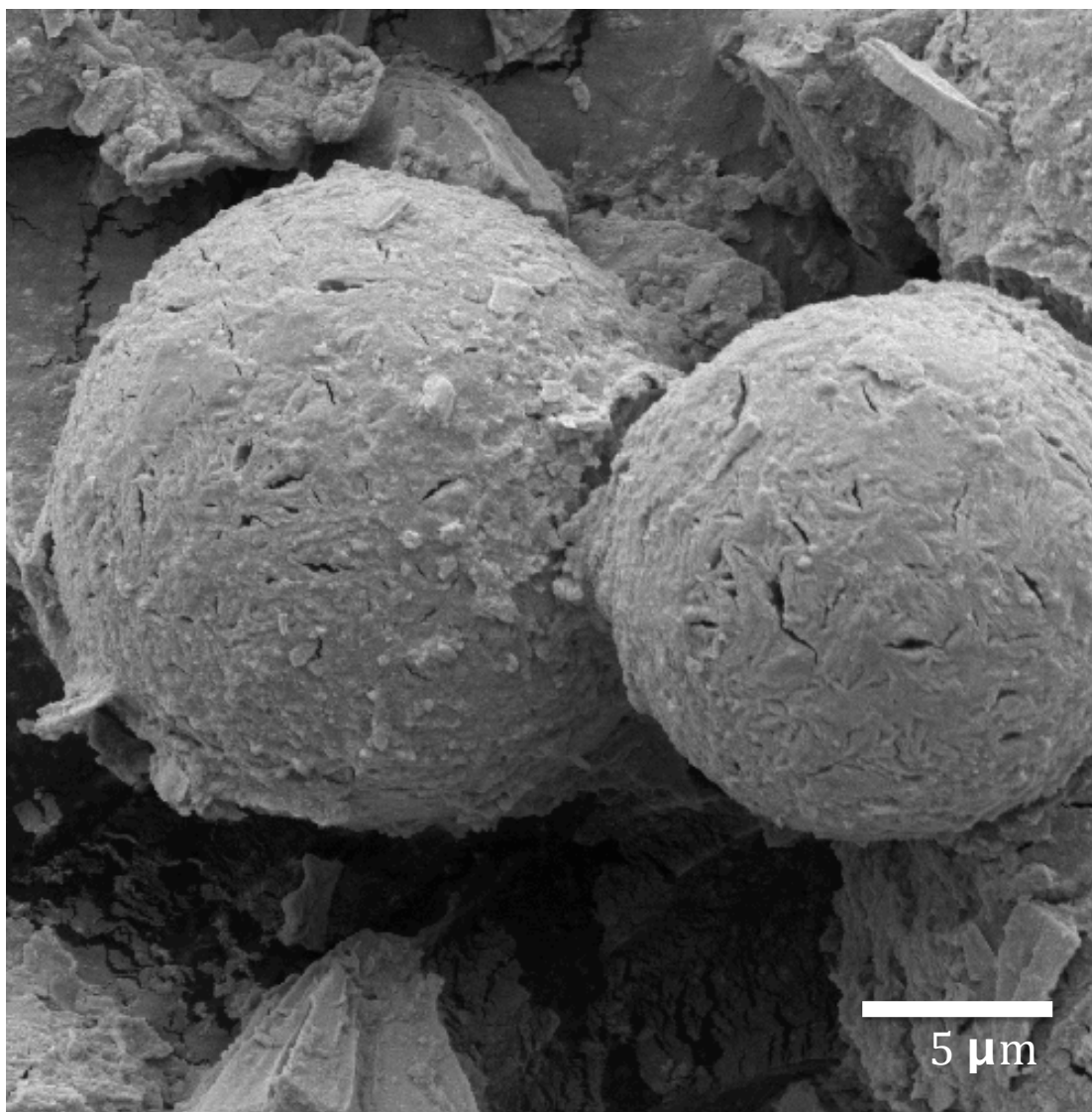


Figure S4: SEM image showing the morphology of the Lanthanum Hydroxide microspheres after adsorption of Congo Red dye on their surface.

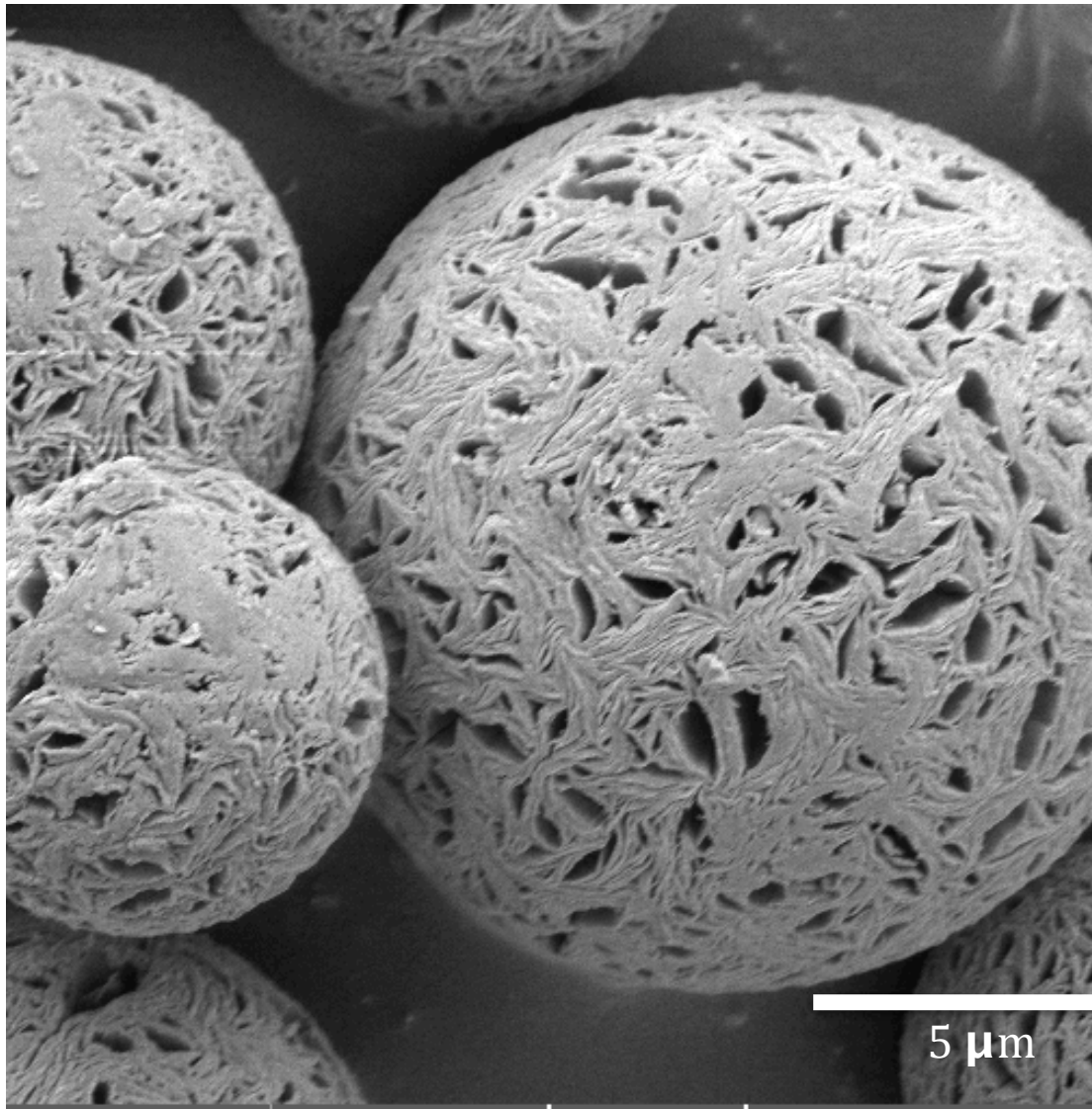


Figure S5: SEM image showing the morphology of the Lanthanum Hydroxide microspheres after calcination at 800C for 7 hours.

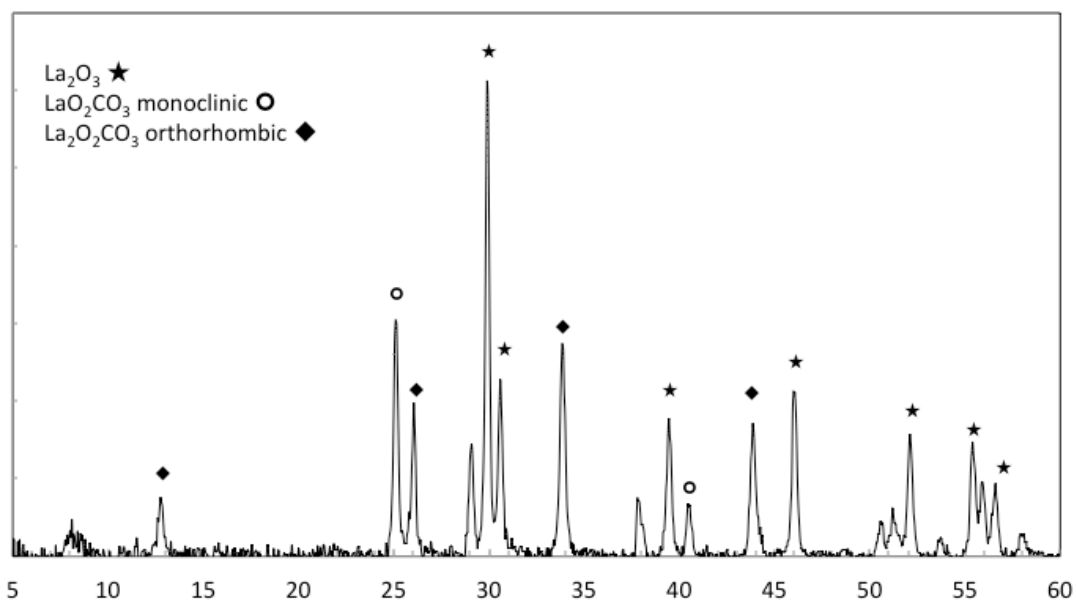


Figure S6: XRD profile for the Lanthanum Hydroxide microspheres after calcination at 800C for 7 hours. The profile shows that the obtained product is a mixture of Lanthanum Oxide and Lanthanum Oxide Carbonate.^{1,2}

1. L. C. Gerber, N. Moser, N. A. Luechinger, W. J. Stark and R. N. Grass, *Chemical Communications*, 2012, **48**, 3869-3871.
2. M. Salavati-Niasari, G. Hosseinzadeh and F. Davar, *Journal of Alloys and Compounds*, 2011, **509**, 4098-4103.