

Electronic Supplementary Information

Assembly of Oriented Iron Oxide and Zeolite Crystals via Biopolymer Films

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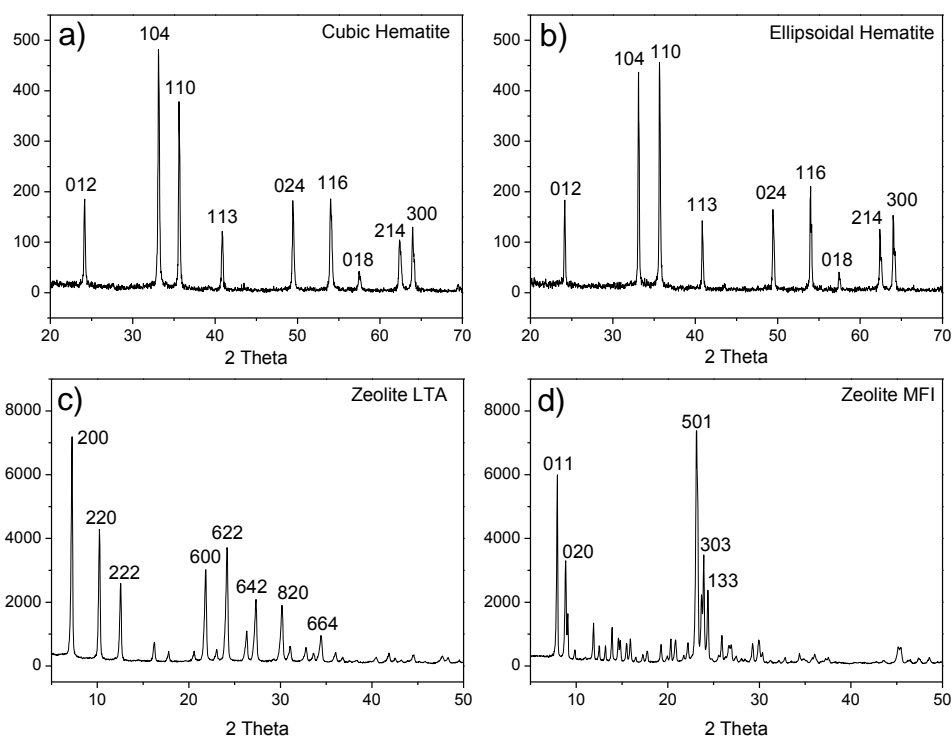


Figure S1. XRD patterns of randomly oriented powders of a) cubic hematite, b) ellipsoidal hematite, c) zeolite LTA and d) zeolite MFI.

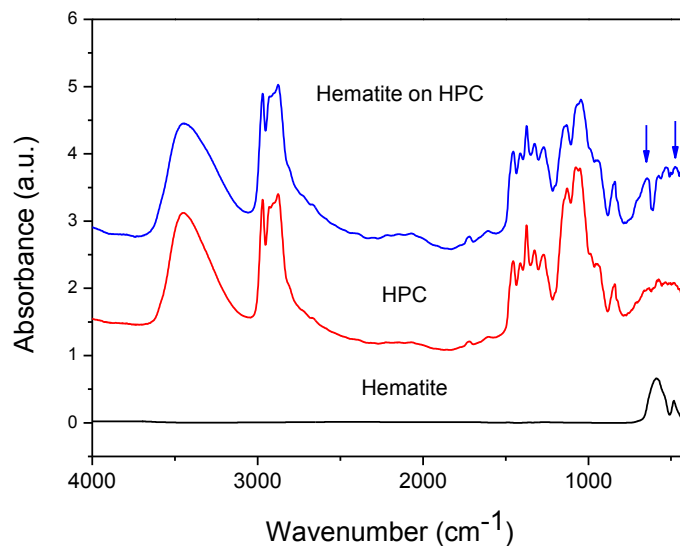


Figure S2. FT-IR traces in mid-infrared regions ($400\text{-}4000\text{ cm}^{-1}$) for the hematite powder (black line), HPC polymer (red line) and oriented hematite monolayer on HPC film (blue line).

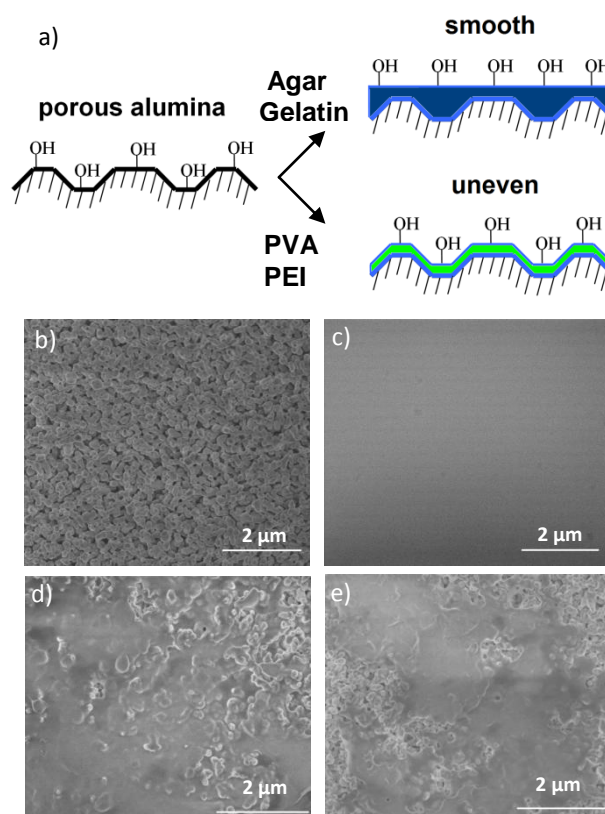


Figure S3. Schematic description of coated polymers with different drying feature on macroporous alumina surface (a), SEM images of bare alumina surface (b), and after it coated with agar film (c), PEI film (d) and PVA film (e) by spin coating.

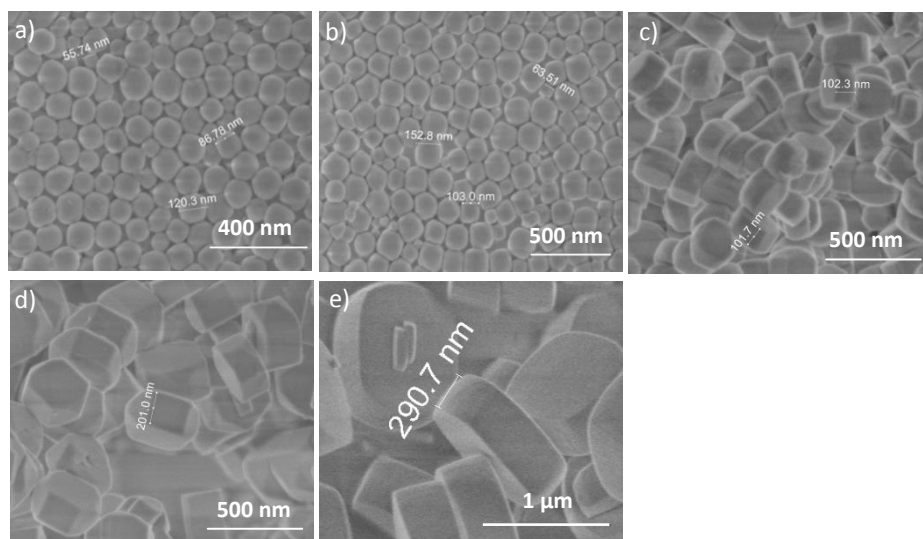


Figure S4. SEM images of LTA-1 crystals (a), LTA-2 crystals (b), MFI-1 crystals (c), MFI-2 crystals (d), MFI-3 crystals (e). The thickness or length of the particles are indicated in the images.

Table S1. Light interference from oriented zeolite monolayers.

zeolite	n_{zeolite}	Average thickness (d) [§]	Calculated (λ) [*]	Observed color
LTA-1	1.45	87 nm	505 nm	cyan
LTA-2	1.45	103 nm	596 nm	orange
MFI-1	1.39	102 nm	567 nm	yellow
MFI-2	1.39	201 nm	372 nm	violet
MFI-3	1.39	291 nm	539 nm	green

[§] The average thickness was determined by SEM measurement of single crystal size as illustrated in Figure S4.

^{*} Calculated using the equation for positive interference: $2nd\cos(\theta_2) = (m + 1/2)\lambda$, m is integer (-2, -1, 0, 1, 2...)