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SUPPLEMENTARY MATERIAL TO

# Oxide coatings with immobilized Ce-ZSM5 as visible light photocatalysts

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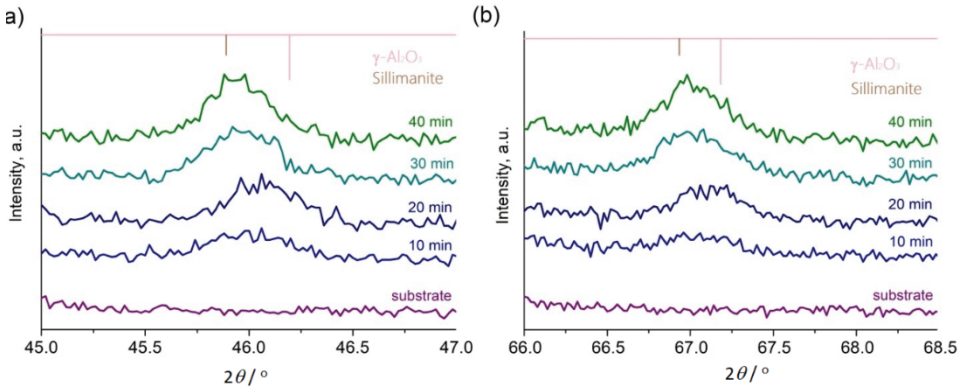


Fig. S-1. High resolution XRD patterns in the range of interest.

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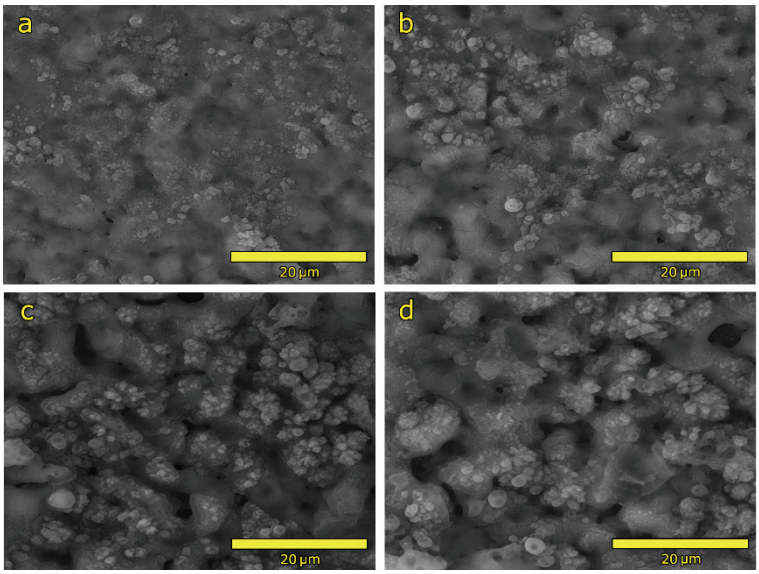


Fig. S-2. Top-view micrographs of coatings obtained in 4 g $L^{-1}$ $Na_2SiO_3$ + 4 g $L^{-1}$ KOH +1 g $L^{-1}$ ZSM-5 after: a) 10 min; b) 20 min; c) 30 min; d) 40 min.

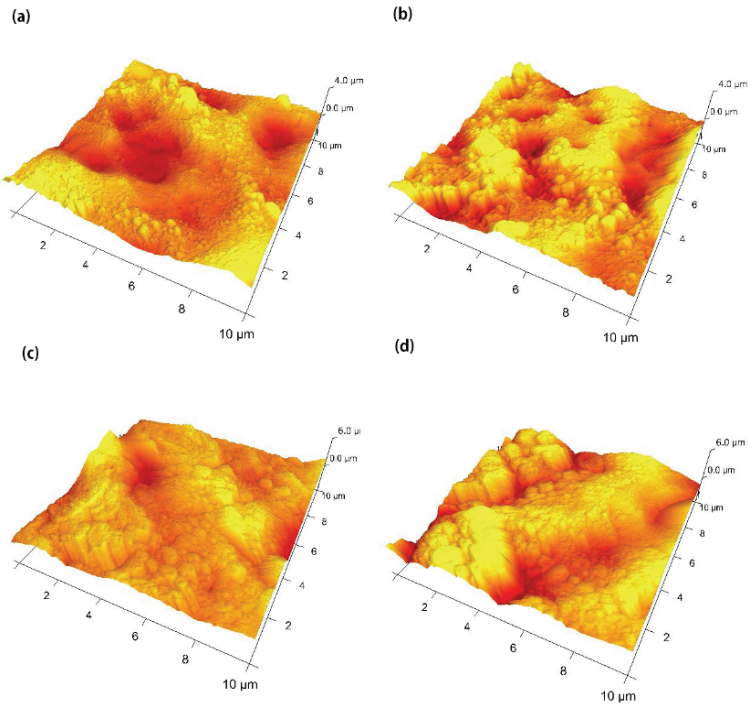


Fig. S-3. Three-dimensional AFM images of oxide coatings formed in supporting electrolyte with ZSM-5 at various stages of PEO process: (a) 10 min; (b) 20 min; (c) 30 min; (d) 40 min.

TABLE S-I. EDS analysis of the formed PEO coatings

| Electrolyte | Element | PEO time, min | | | |
|---|---|---|---|---|---|
| | | 10 | 20 | 30 | 40 |
| | | Composition, wt% | | | |
| ZSM5+Ce | O | 52.3 | 60.5 | 62.4 | 62.7 |
| | Al | 44.5 | 34.3 | 33.1 | 31.3 |
| | Si | 2.7 | 4.5 | 3.8 | 5.3 |
| | K | 0.1 | 0.2 | 0.2 | 0.2 |
| | Na | 0.4 | 0.5 | 0.5 | 0.5 |
| ZSM5 | O | 40.4 | 43.9 | 58.4 | 62.1 |
| | Al | 56.0 | 51.9 | 36.5 | 32.6 |
| | Si | 3.0 | 3.5 | 4.4 | 4.7 |
| | K | 0.2 | 0.2 | 0.2 | 0.2 |
| | Na | 0.4 | 0.5 | 0.5 | 0.4 |
| SE | O | 47.3 | 50.5 | 52.9 | 61.8 |
| | Al | 49.7 | 44.5 | 41.9 | 32.7 |
| | Si | 2.6 | 4.4 | 4.5 | 4.7 |
| | K | 0.1 | 0.2 | 0.2 | 0.3 |
| | Na | 0.3 | 0.4 | 0.5 | 0.5 |

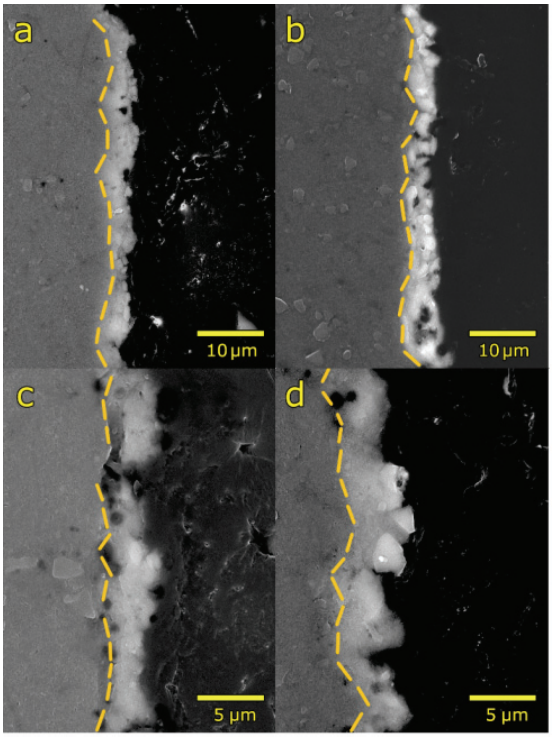


Fig. S-4. Cross-sectional SEM of the obtained composite coatings with immobilized Ce-exchanged ZSM-5 zeolite processed for: a) 10 min; b) 20 min; c) 30 min; d) 40 min.