

Morphological Variations over Zeolite-Y with Bimetallic Metal Oxides

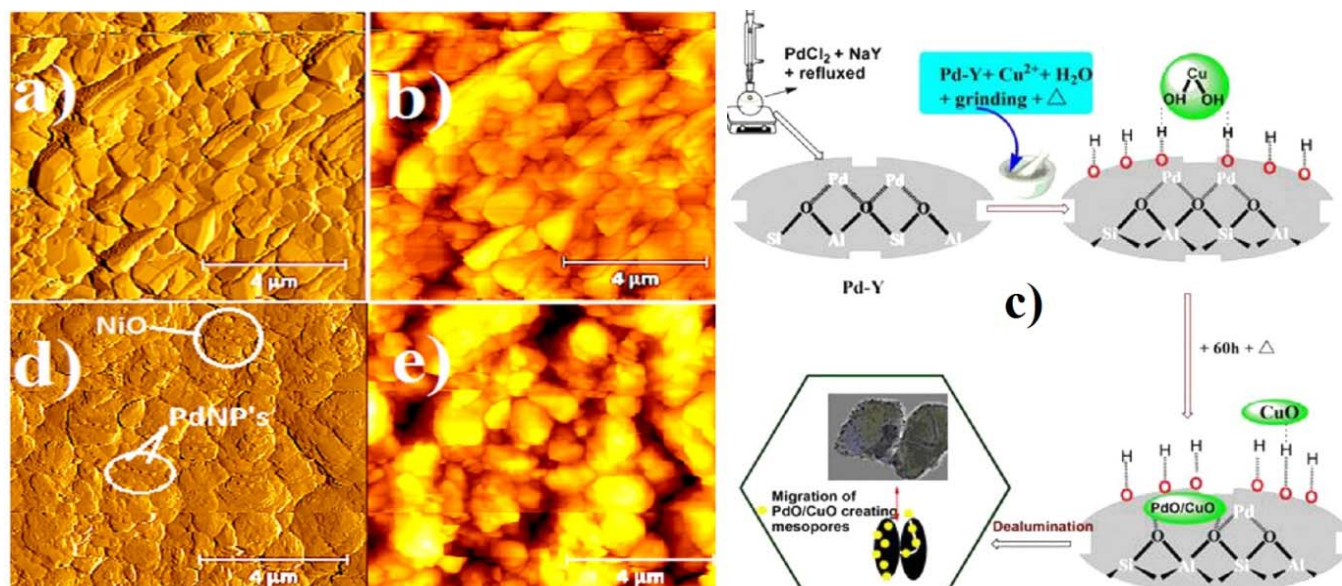
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Abstract—Bimetallic palladium based nickel and copper oxides (NiO/CuO) were synthesized over zeolite-Y via a simple solid-state dispersion approach. Both the synthesized nanomaterials were found to attain diverse morphology due to loading of different metal salts. Interestingly, the Pd/NiO NPs were found to be uniformly distributed over the surface of zeolite-Y whereas in Pd/CuO, an interface was created at the surface followed by successful encapsulation of Pd/CuO nanocomposites via the mesoporous channel formation. The above synthesized nanocomposites were well characterized via different spectrochemical and physicochemical techniques. High resolution transmission electron microscopy analysis revealed for the formation of highly distributed Pd/NiO NPs and ultrafine structure of Pd/CuO nanointerface (2-5 nm range) at zeolite-Y surface. Creation of the intracrystallite mesopore channel was also apparent from the transmission electron and atomic force microscopy analysis whereas no such mesopores were observed in case with Pd/NiO supported over zeolite-Y. Surface area of zeolite-Y embedded with Pd/CuO nanocomposites was found to be much lower than the neat zeolite-Y whereas there was no such decrement in surface area for Pd/NiO nanocomposites synthesized over zeolite-Y.



References

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