Core Double-Shell Fe_2O_3@SiO_2@Jarosite Nanoparticles Synthesized by Laser Ablation of Turquoise in Ethanol

Mansoureh Jalili[†], *Hajar Ghanbari*[*,‡], *Rasoul Malekfar*[*,†], *Seyed Shayan Mousavi Masouleh*[II]

[†]Atomic and Molecular Physics Group, Department of Physics, Faculty of Basic Sciences, Tarbiat Modares University, P.O. Box 14115-175, Tehran, Iran

[‡]School of Metallurgy and Materials Engineering, Iran University of Science and Technology (IUST), P.O. Box 163- 16765, Tehran, Iran

[II]Department of Materials Science and Engineering, McMaster University, 1280 Main Street W. Hamilton, ON L8S 4L7, Canada

Address correspondence to Hajar_ghanbari@iust.ac.ir & malekfar@modares.ac.ir

Keywords: turquoise, liquid phase-pulsed laser ablation, Fe2O3@SiO2@jarosite core double-shell hybrid nanoparticles

Electronic Supporting Information (ESI)

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This Supporting Information contains data on the chemical composition analysis (EDX analysis) of the vein (Figure S1(a-c)) and the turquoise phase (Figure S1(d)) of the target before laser ablation (Figure S1); the FESEM images for the analysis of morphology of the surface of vein

phase in turquoise stone target after laser ablation (Figure S2(a-b)) and also the synthesized-product core double-shell Fe_2O_3@SiO_2@jarosite hybrid nanoparticles (Figure S2 (c-d))

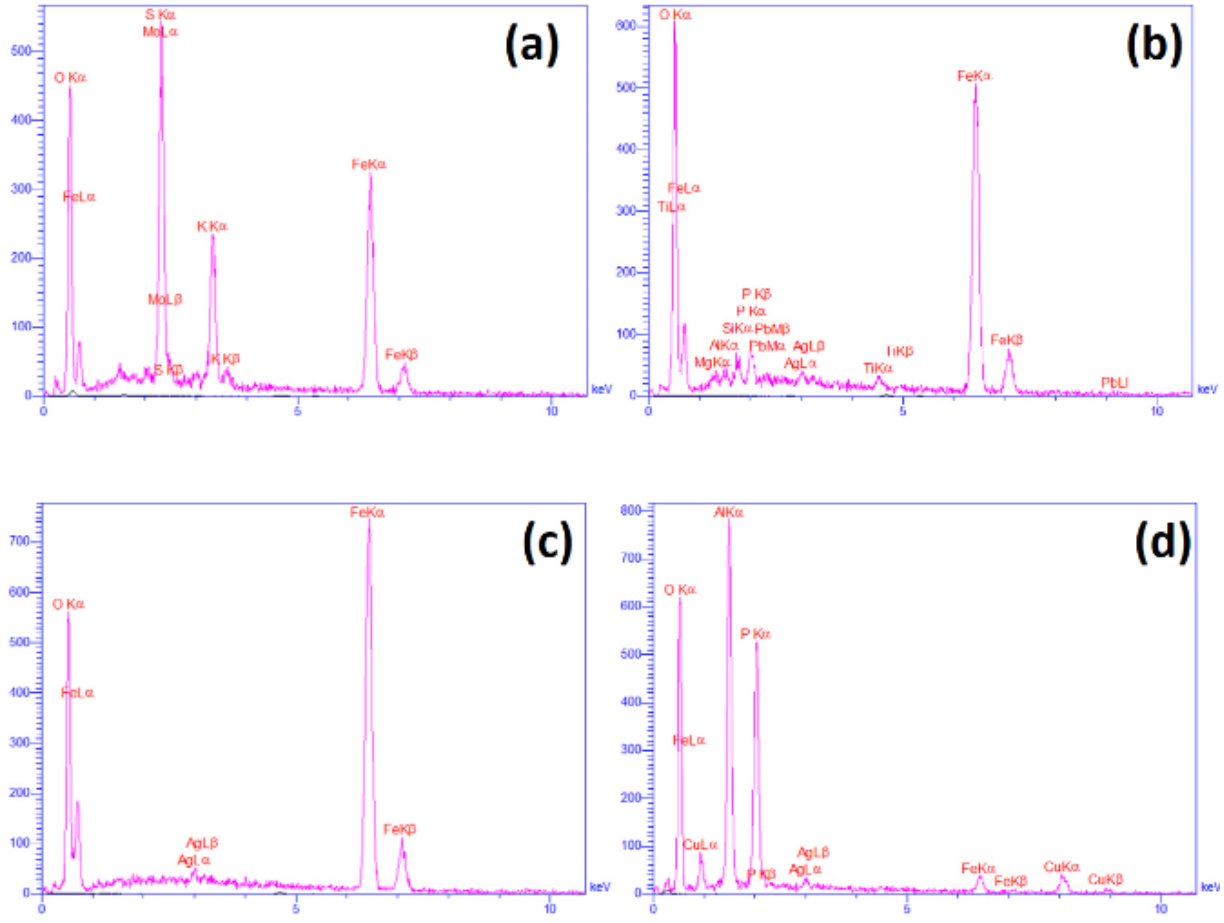

Figure S1. EDX spectrum, showing the chemical composition of (a-c) the vein phase (i.e., Fe, Si, K, S, O) and (d) the turquoise phase (i.e., Cu, Al, P, Fe, O) of the turquoise target stone before laser ablation.

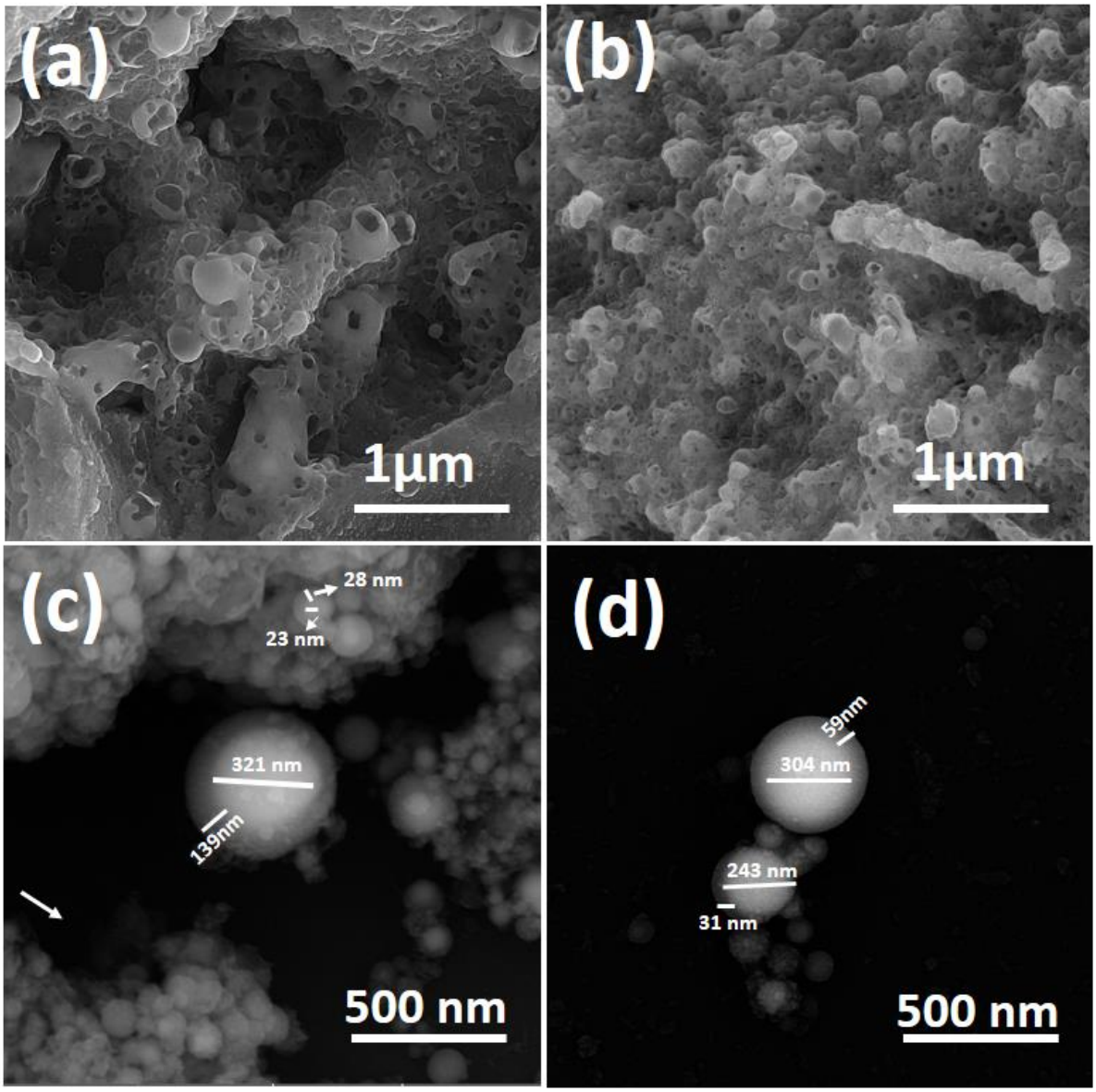

Figure S2. FESEM images of (a-b) the surface of the vein phase of the target after 150 min of non-continuously irradiation, (c-d) the synthesized product core double-shell Fe_2O_3@SiO_2@jarosite hybrid nanoparticles prepared through 10 min laser ablation. For all experiments, ethanol was used as a liquid medium and laser wavelength was adjusted at 1064 nm.

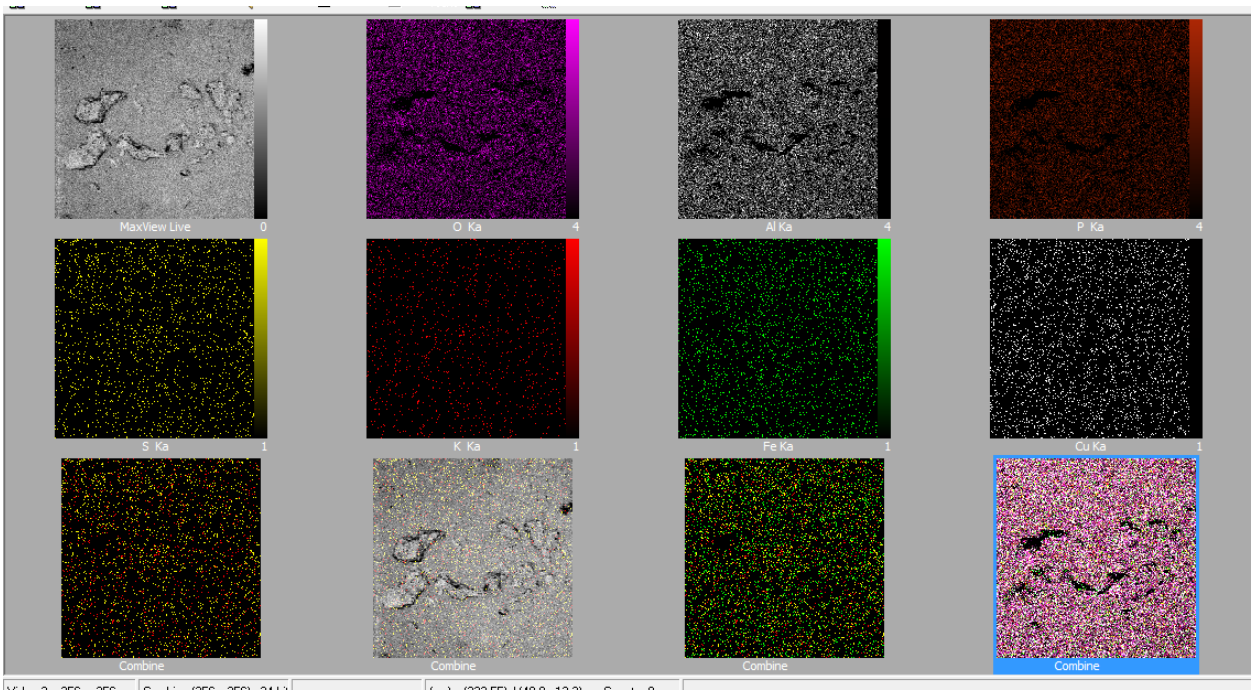

Figure S3: EDX mapping from the turquoise phase of the target after 150 min of non-continuously irradiation in ethanol environment at 1064 nm laser wavelength showing the presence of Cu, Al, P, Fe, O, K, and S in the turquoise phase of the target

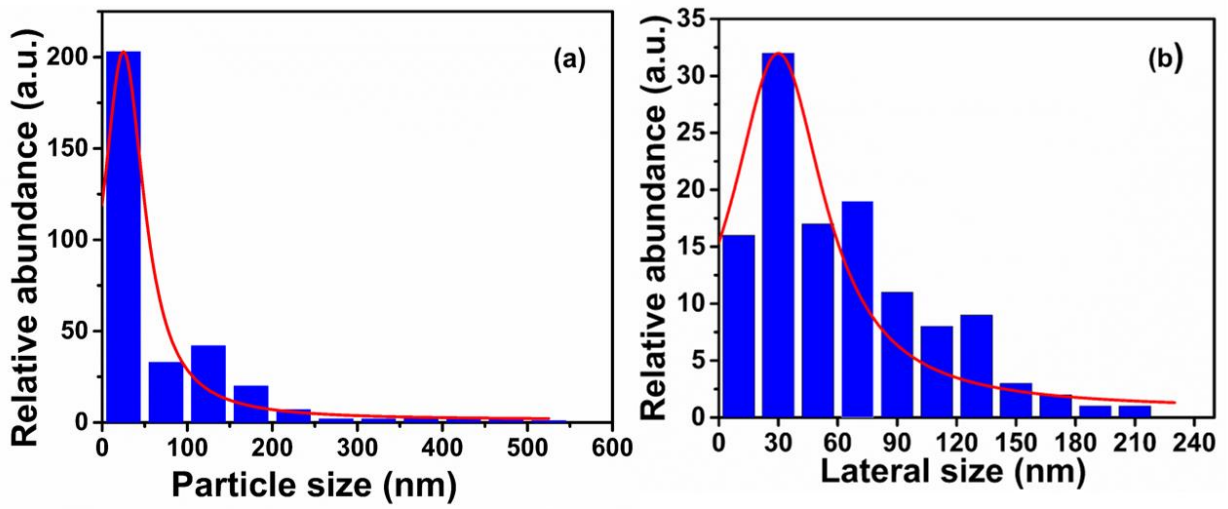

Figure S4. Size distribution measured from various FESEM images of the samples (a) iron-containing particles and (b) lateral size of the AlP nanosheets.

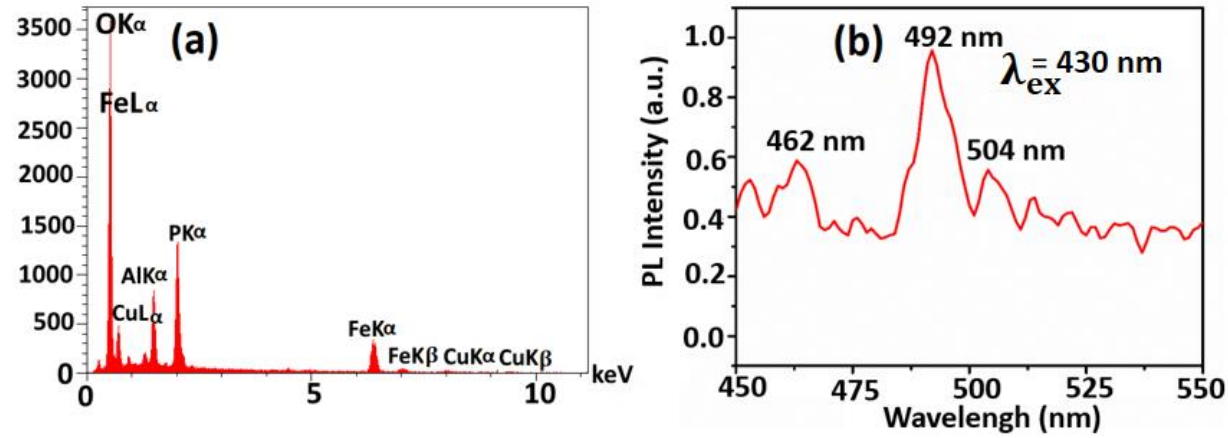

Figure S5: (a) EDX analysis and (b) PL spectrum of the turquoise phase-ablated species by 10 min laser ablation of the turquoise phase of the target in the ethanol environment at 1064 nm laser wavelength.

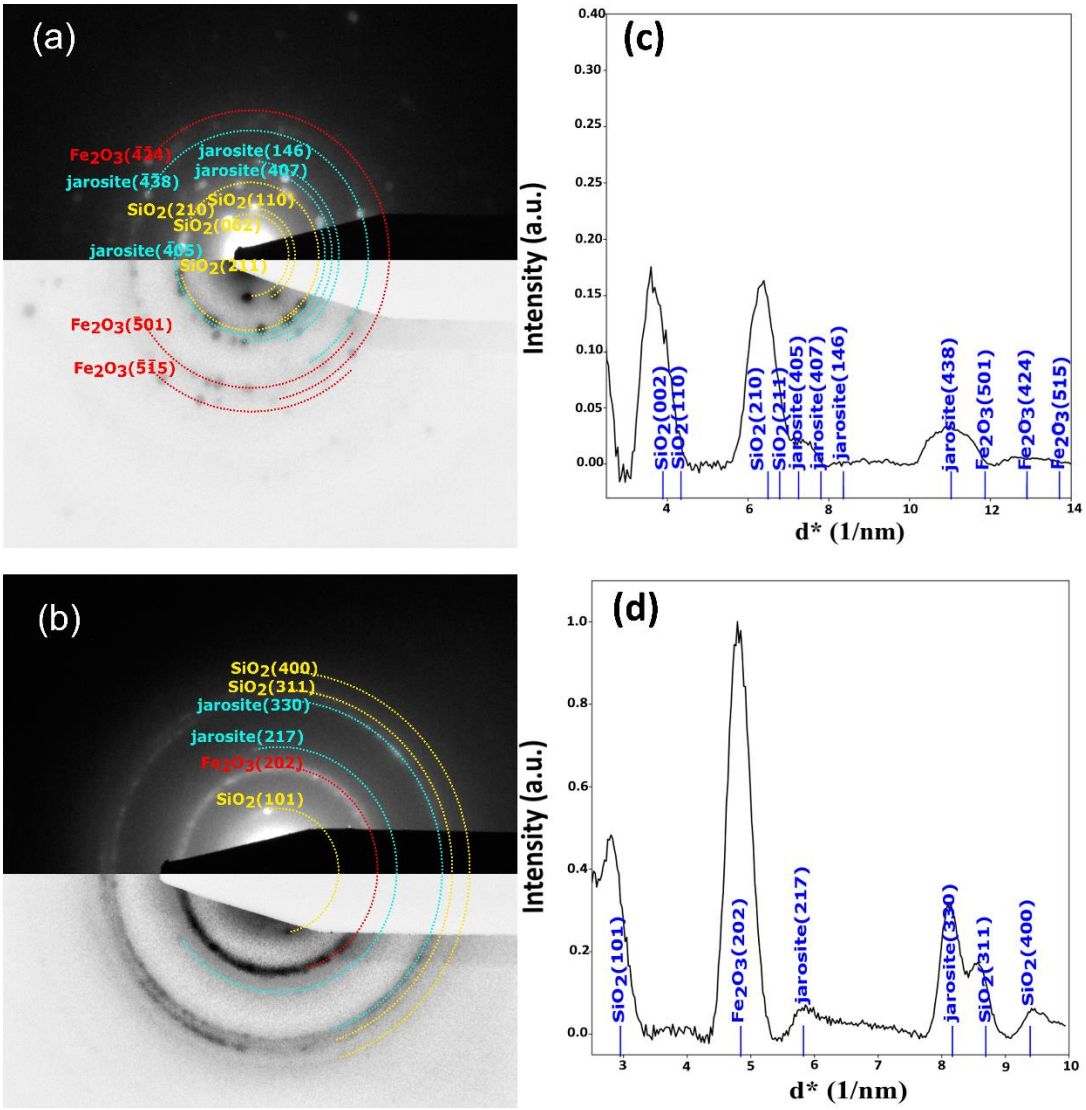

Figure S6: (a-b) diffraction patterns captured from different areas of the vein phase-ablated species sample containing Fe_2O_3@SiO_2@jarosite hybrid nanoparticles, (c-d) radial profile (circular integration of intensity in reciprocal space) of the diffraction patterns. Blue vertical lines in the spectrum demonstrate the diffraction ring planes in reciprocal space.