Supporting information

Effect of sintering temperature and time on the microstructure, density, phase, selected mechanical and tribological properties of composite produced by the spark plasma sintering

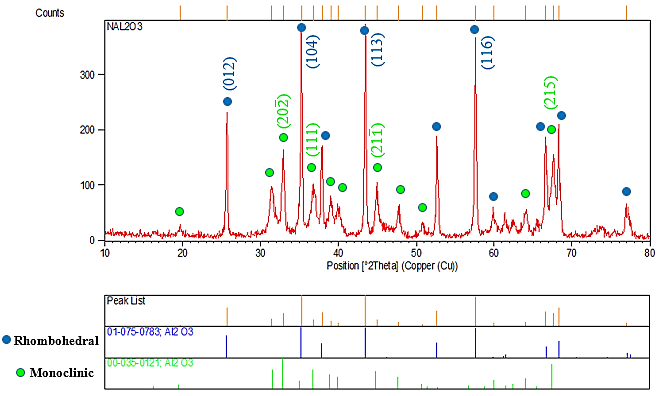
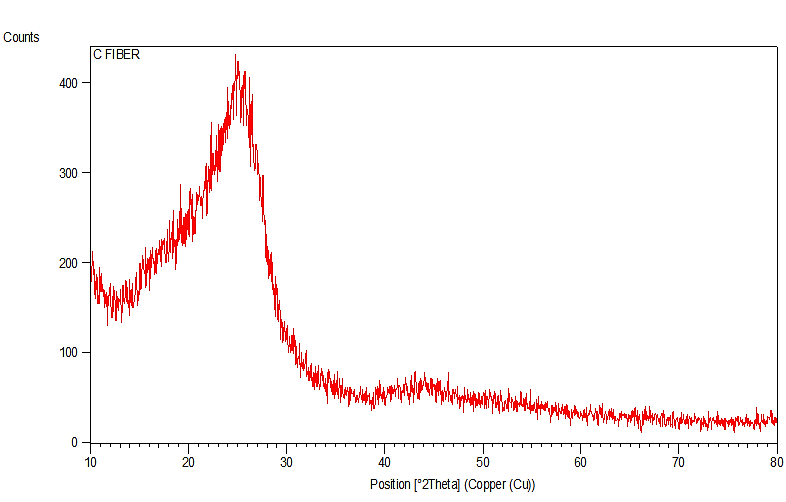
**Fig. S1. XRD results of carbon fiber

Fig. S2. XRD results of Al2O3 powder

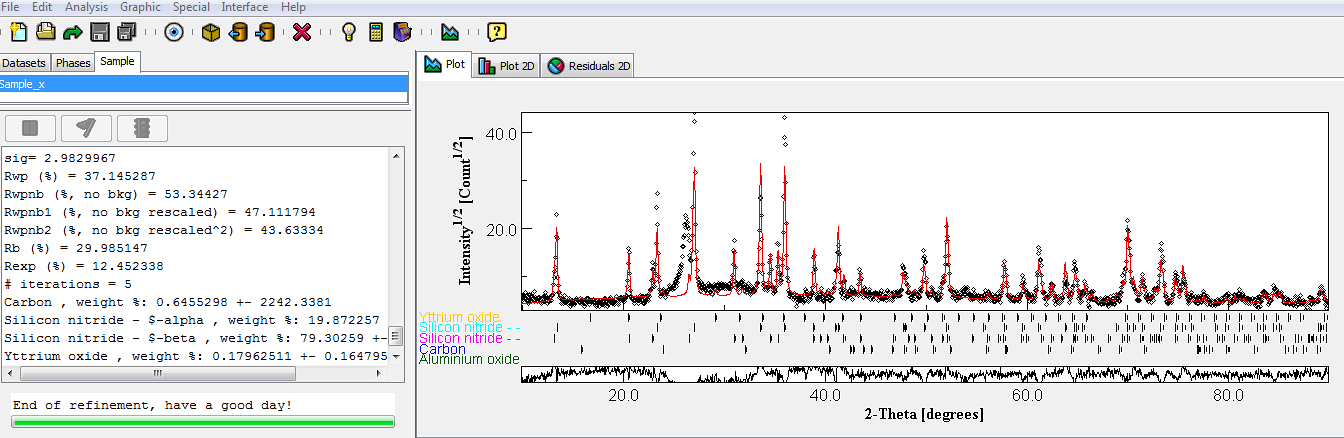
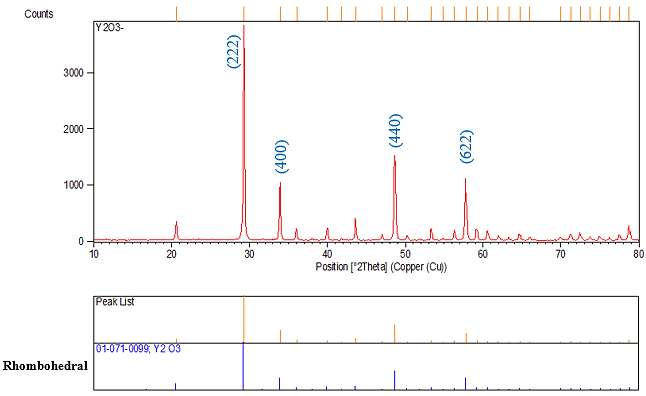
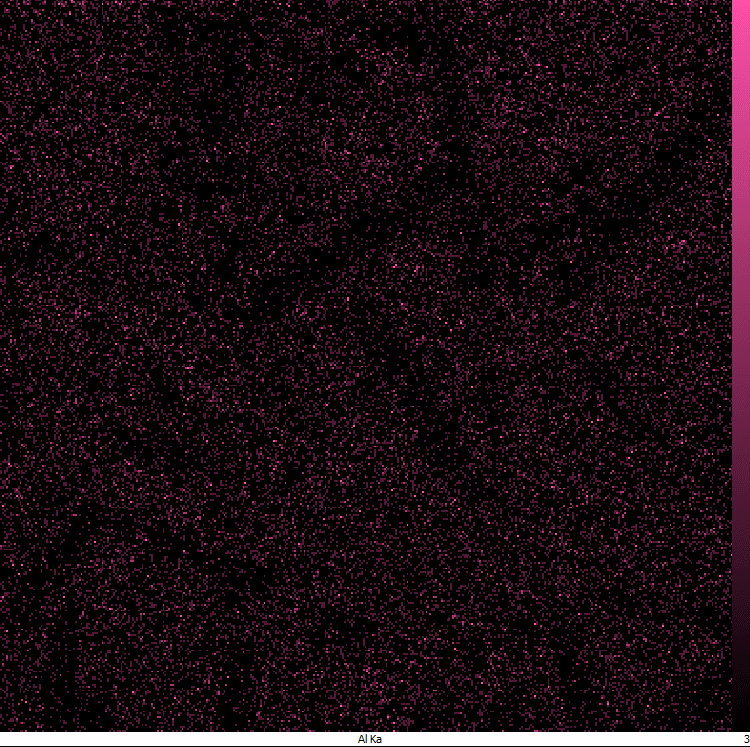
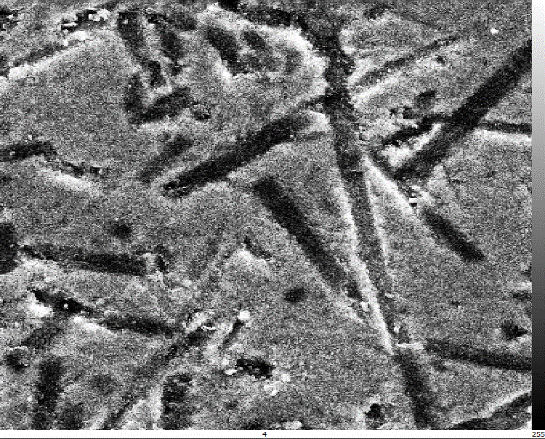
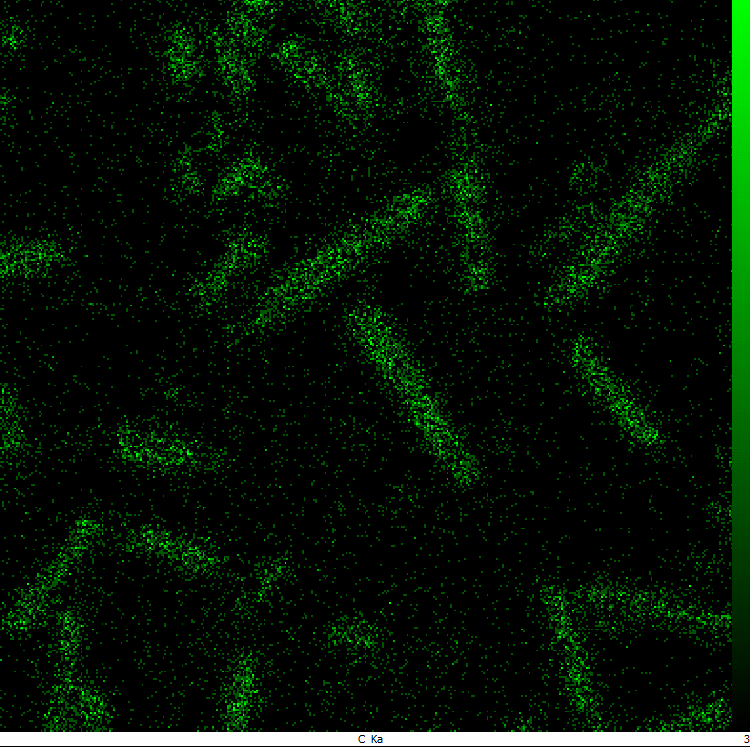
**Fig. S3. XRD results of Y2O3 powder

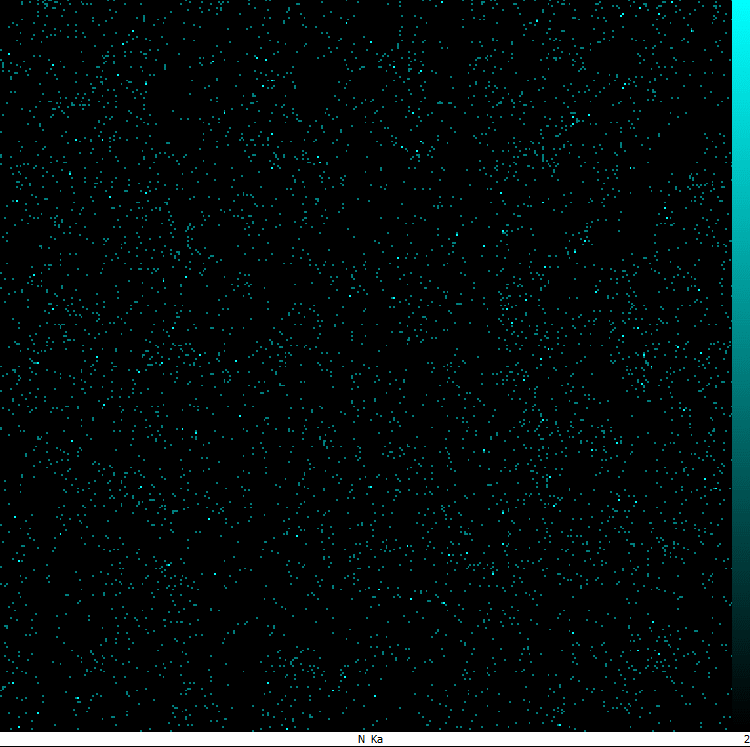
Figure S4. Quantitative analysis results of sample 5 using MAUD software



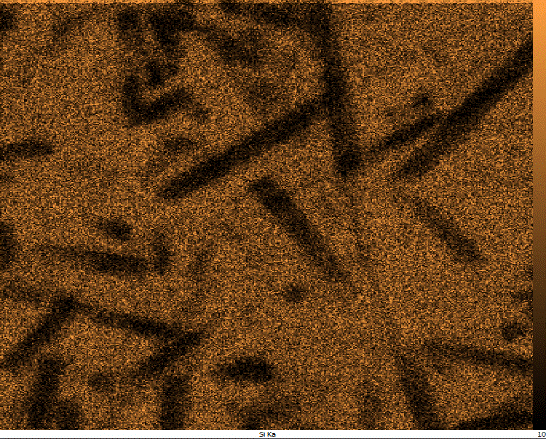
**Al**



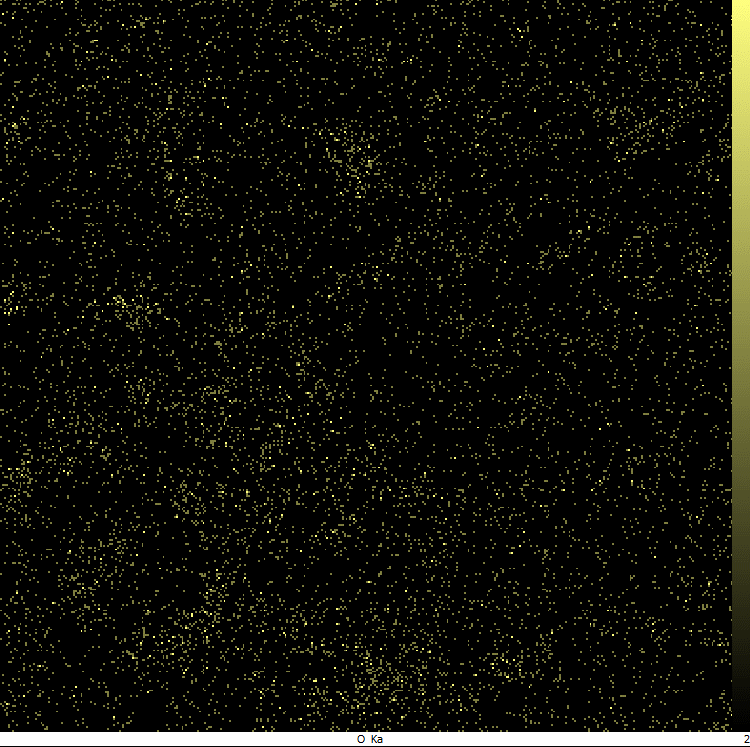
**C**



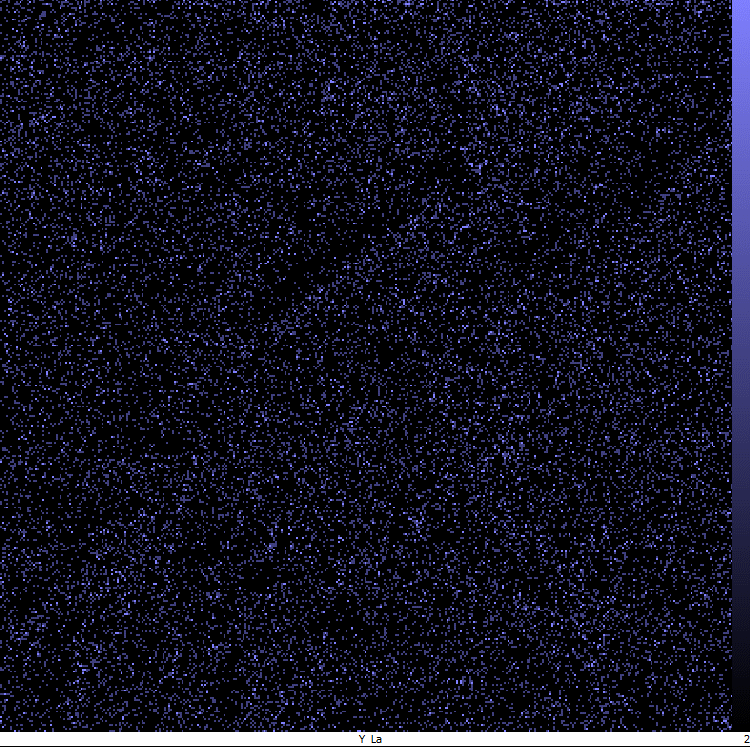
**N**



**Si**

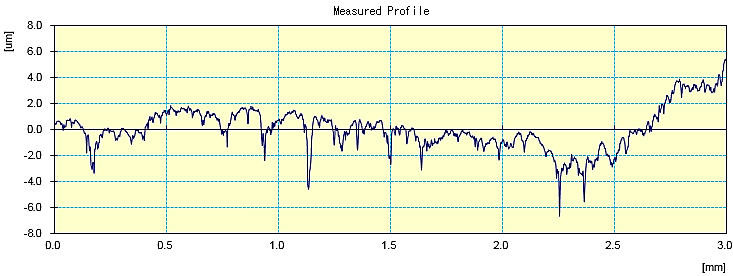


**O**

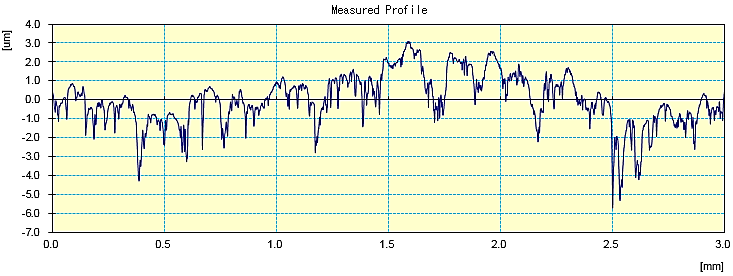


**Y**

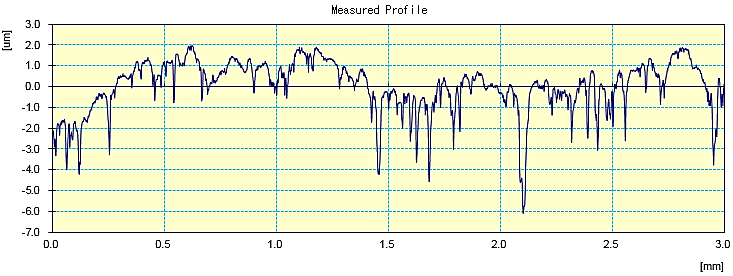
Fig. S6. SEM images and X-ray mapping from the distribution of elements in sample 5.



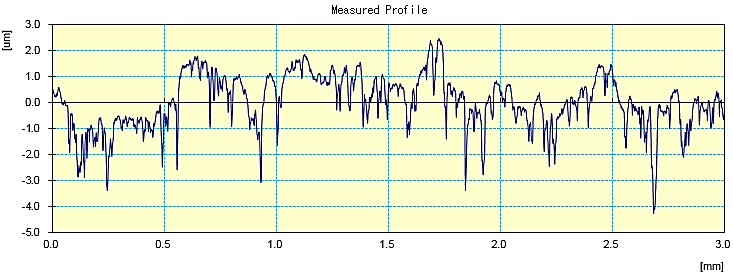
**a**



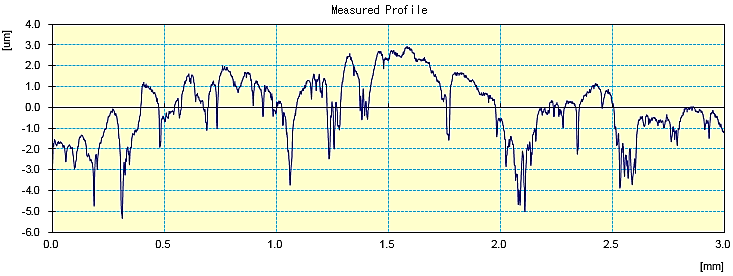
**c**



**b**



**d**



**e**

Fig. S7. Surface roughness profile curves of sintered samples a) sample 1, b) sample 2, c) sample 3, d) sample 4, e) sample 5

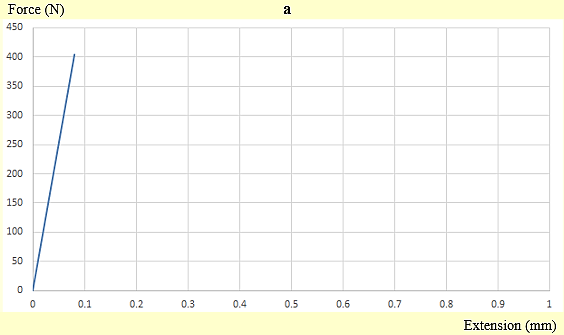
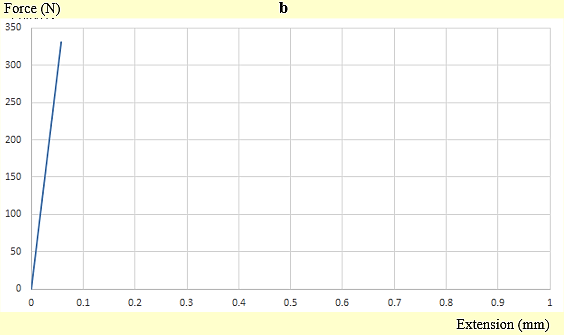
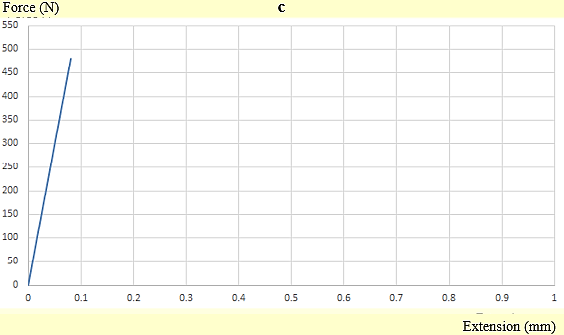
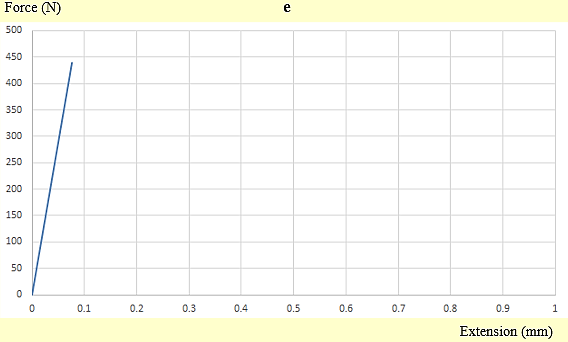
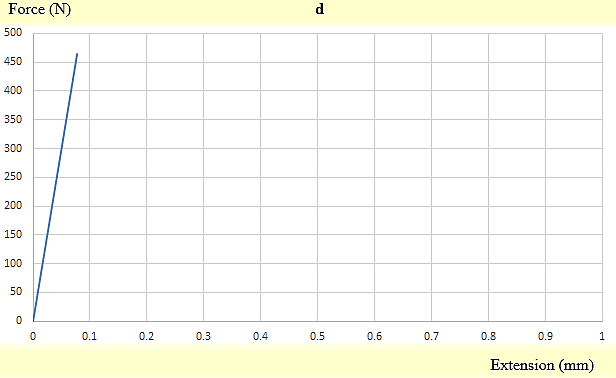
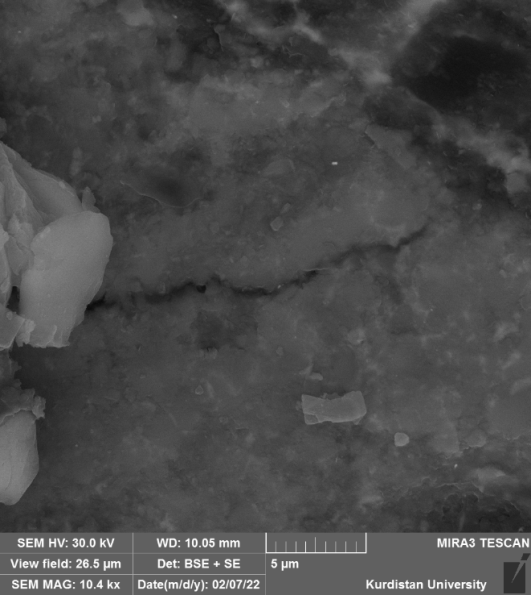
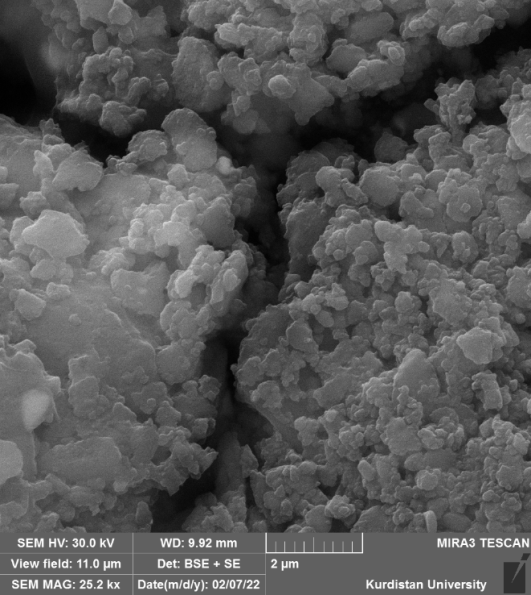
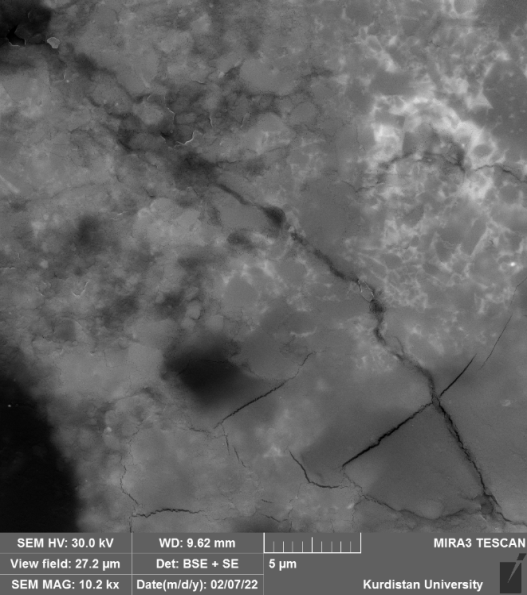


Fig. S8. The force displacement curve of the sintered samples: a) sample 1, b) sample 2, c) sample 3, d) sample 4, and e) sample 5.

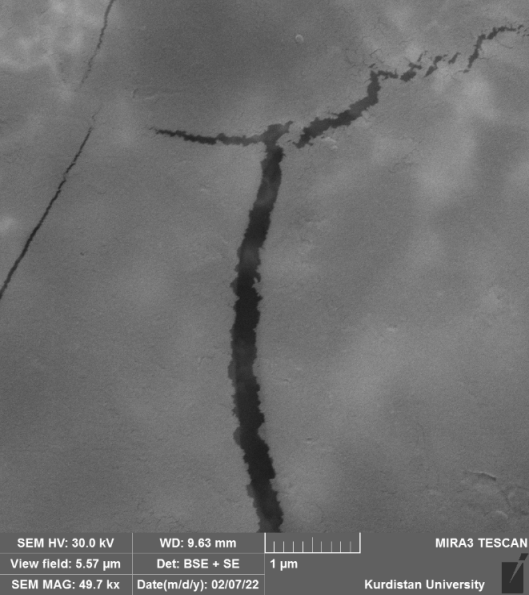
**a**



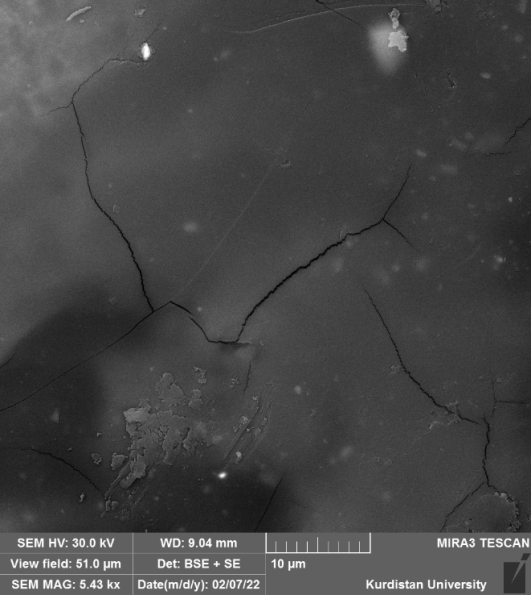
**b**



**c**



**d**



**e**

Fig. S9. FESEM images of the crack created by the Vickers indenter on the sintered samples: a) sample 1, b) sample 2, c) sample 3, d) sample 4, and e) sample 5.