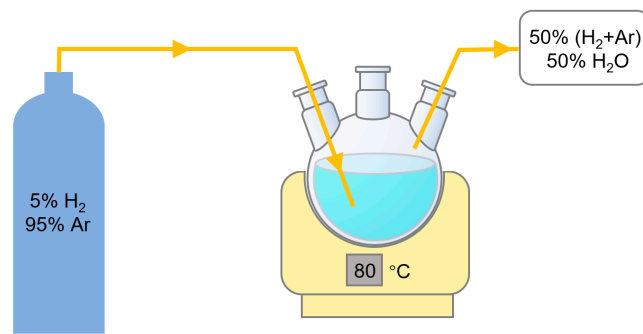
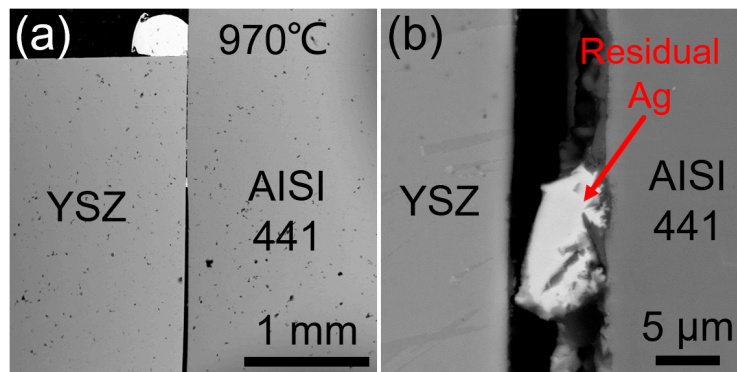


## Supplementary Information:

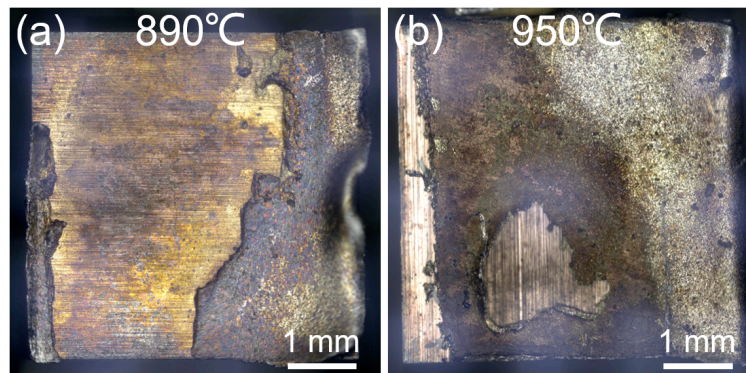


**Figure S1.** Schematic diagram of preparation of wet reducing atmosphere.

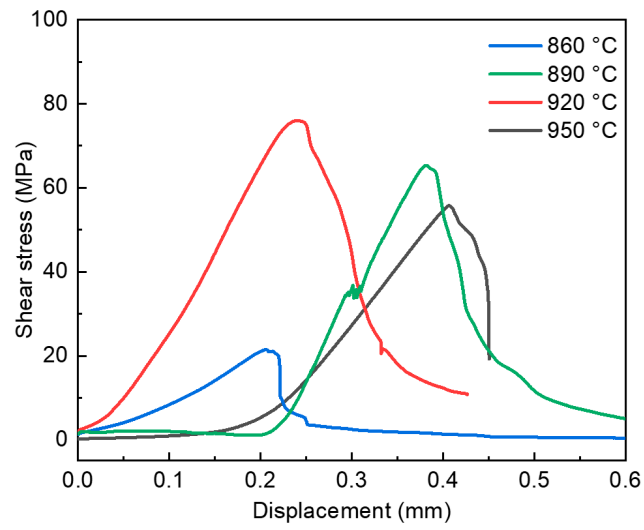


**Figure S2.** (a) Overview SEM image and (b) interfacial microstructure of YSZ/AISI 441 joints

obtained at 970 °C for 30 min.



**Figure S3.** Fracture surfaces at (a) 890 °C and (b) 950 °C at the YSZ side.



**Figure S4.** The shear stress-shear displacement curve of joints obtained at various joining temperatures.