

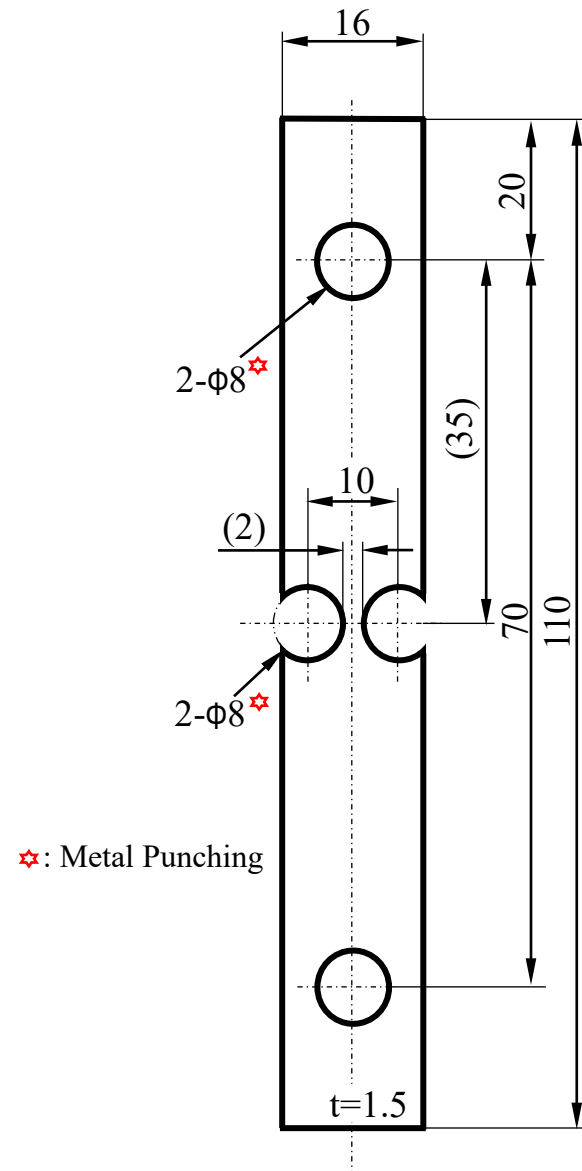


Figure 1: Schematic diagram of the test specimen fabricated through the punching process.

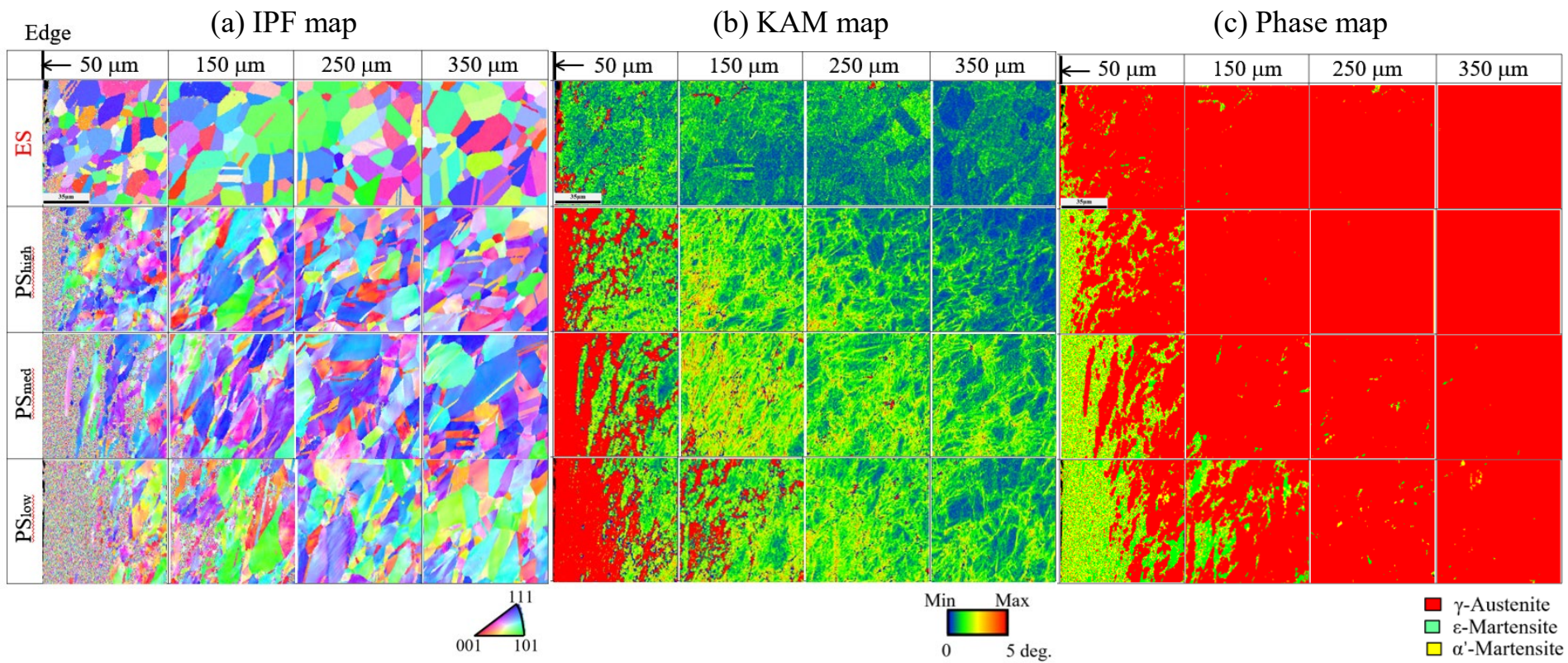


Figure 2: Inverse pole figure, kernel average misorientation (KAM), and phase maps for the ES, PS_{low}, PS_{med}, and PS_{high} samples.

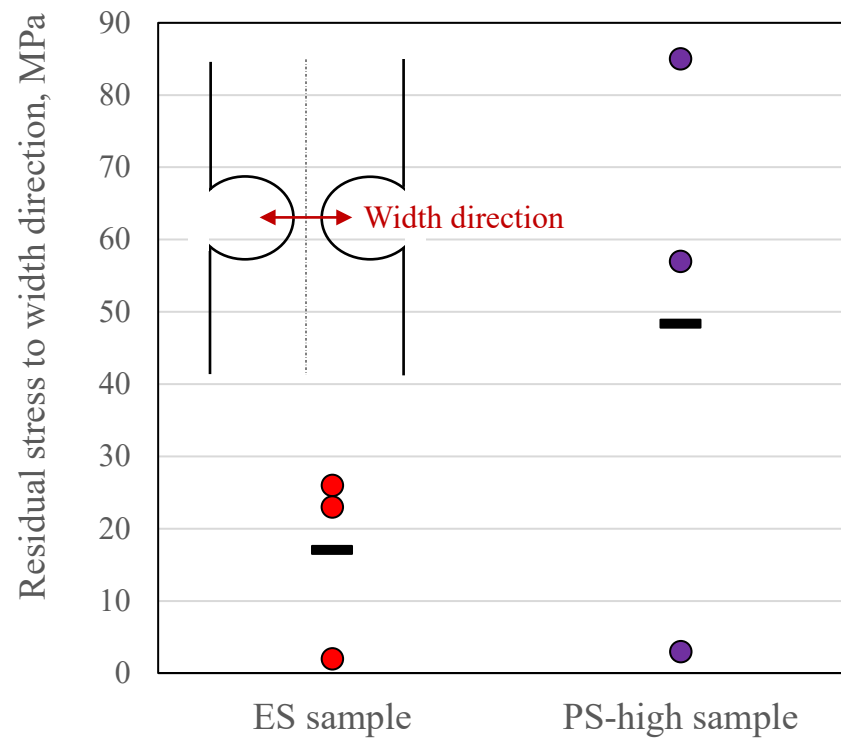


Figure 3: Residual stress in ES and PS_{high} samples near the machined edge.

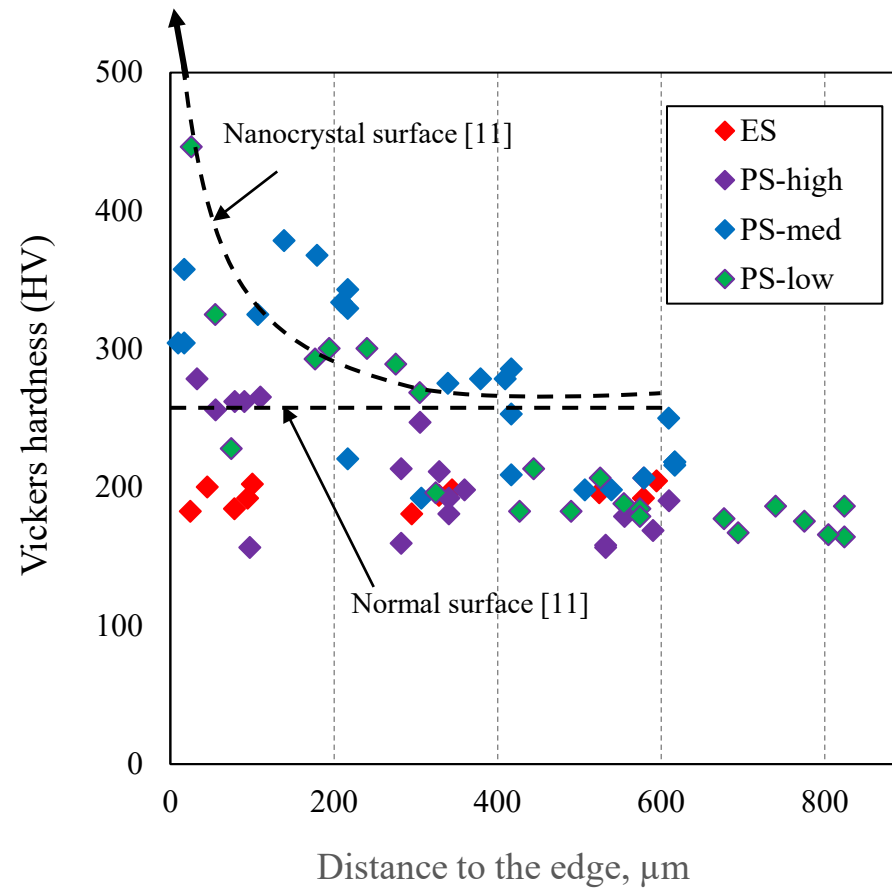


Figure 4: Vickers hardness measurements of the ES, PS_{low}, PS_{med}, and PS_{high} samples, taken from the machined surface.

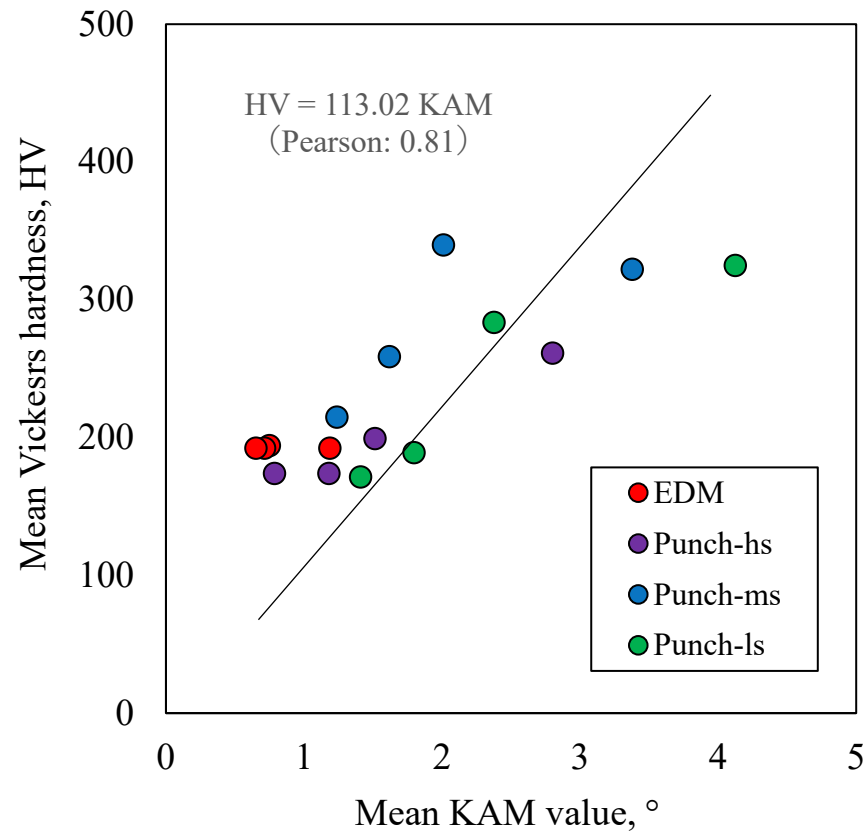


Figure 5: Relationship between the mean Vickers hardness and KAM value for the ES, PS_{low}, PS_{med}, and PS_{high} samples.

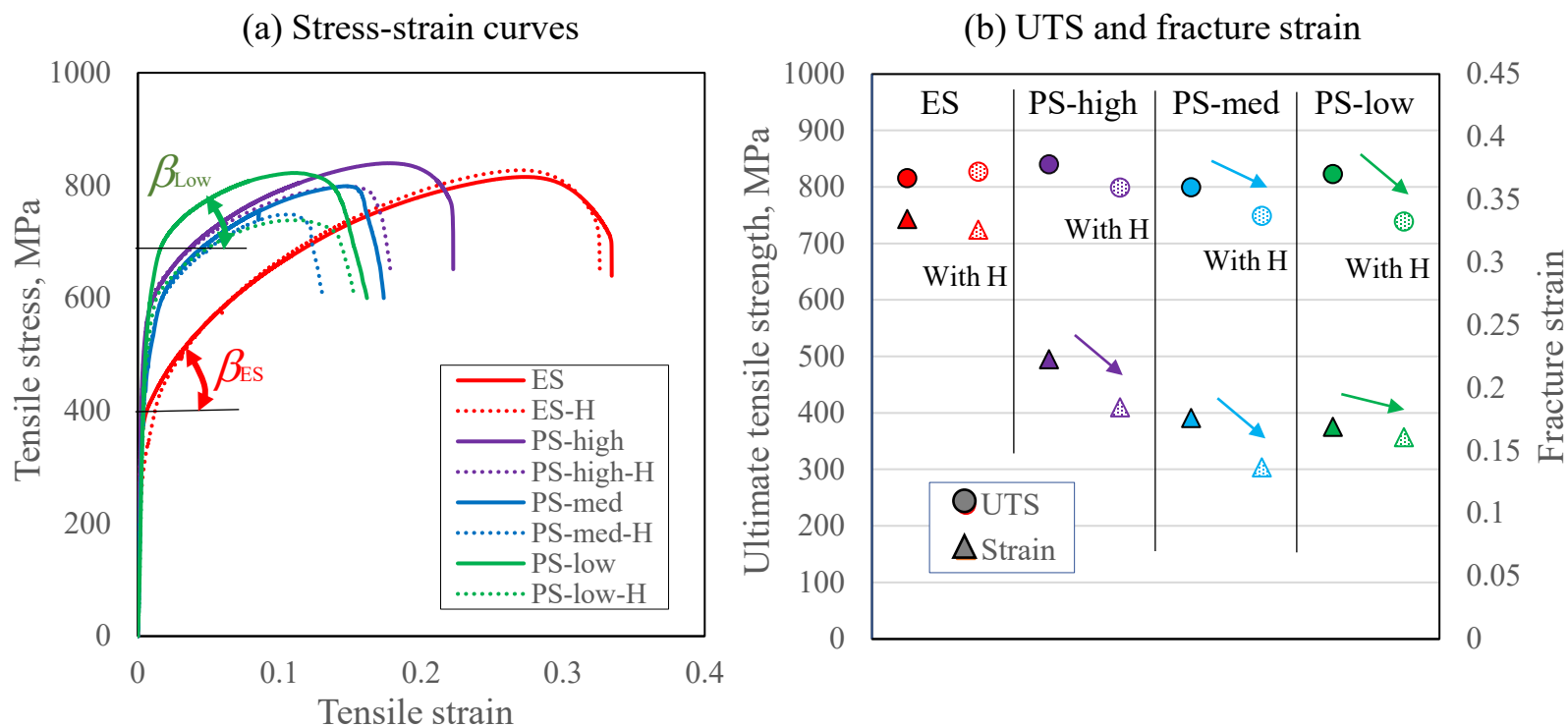


Figure 6: Tensile properties of the ES, PS_{low}, PS_{med}, and PS_{high} samples with and without hydrogen charging: (a) stress-strain curves; (b) ultimate tensile strength and fracture strain.

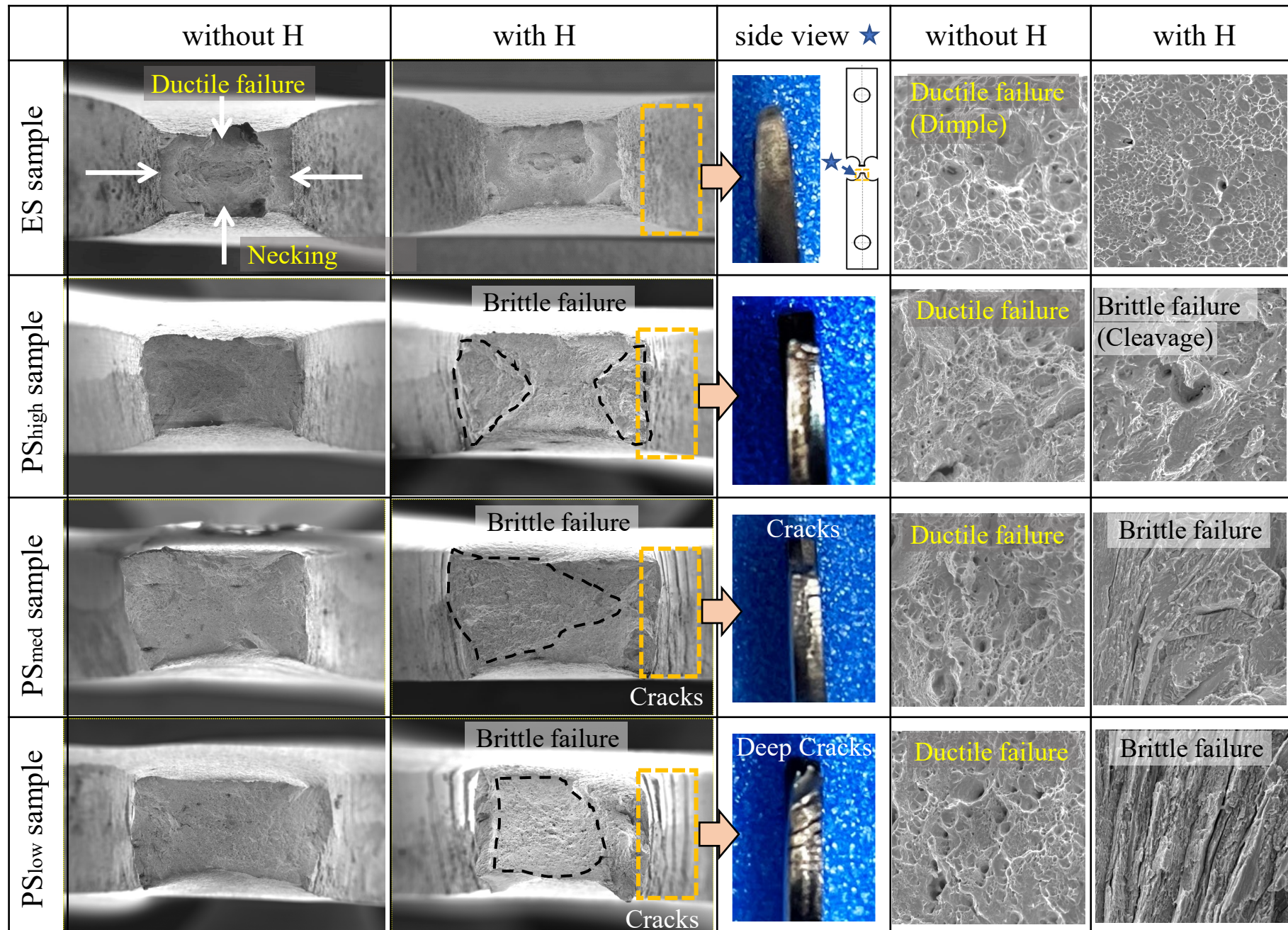


Figure 7: SEM images of fracture surfaces after the tensile test for the ES, PS_{low}, PS_{med}, and PS_{high} samples, with and without hydrogen charging.

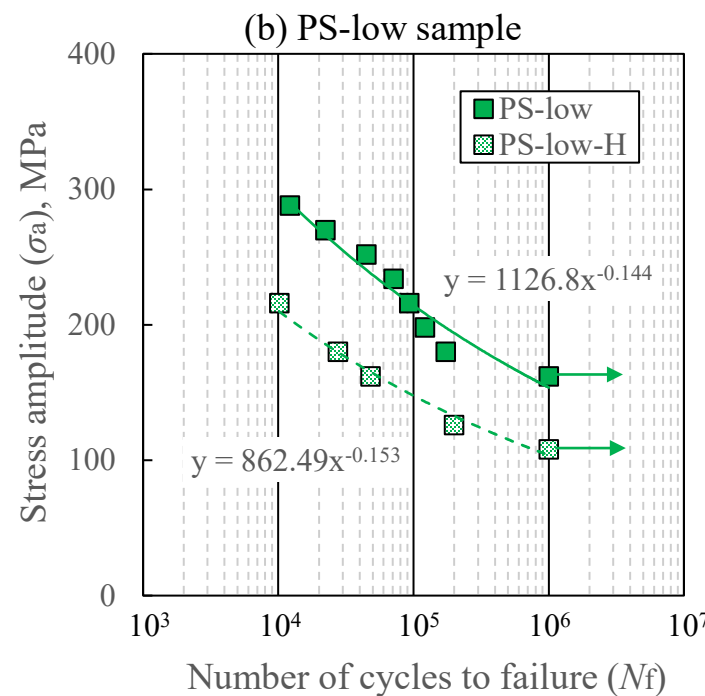
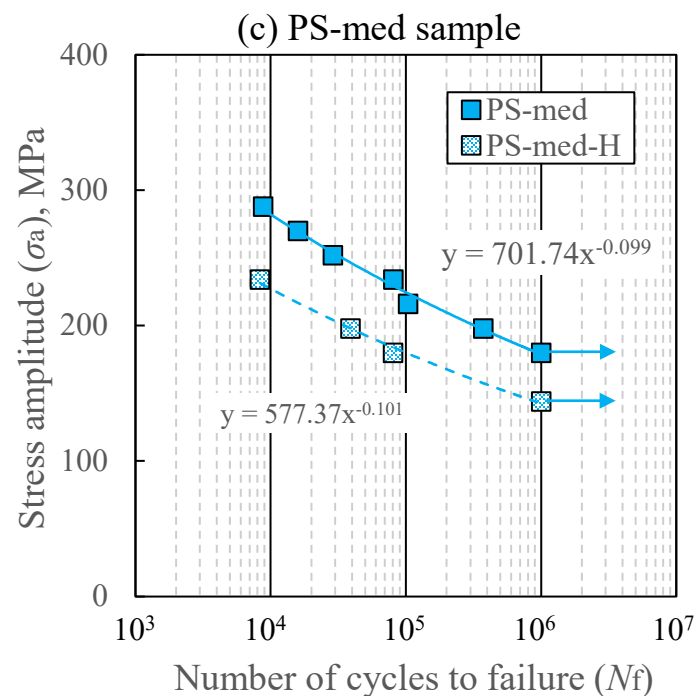
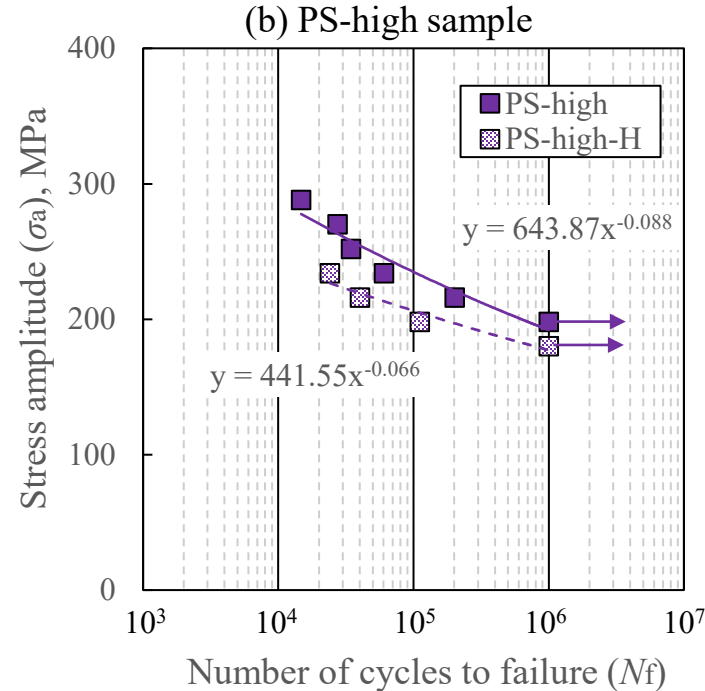
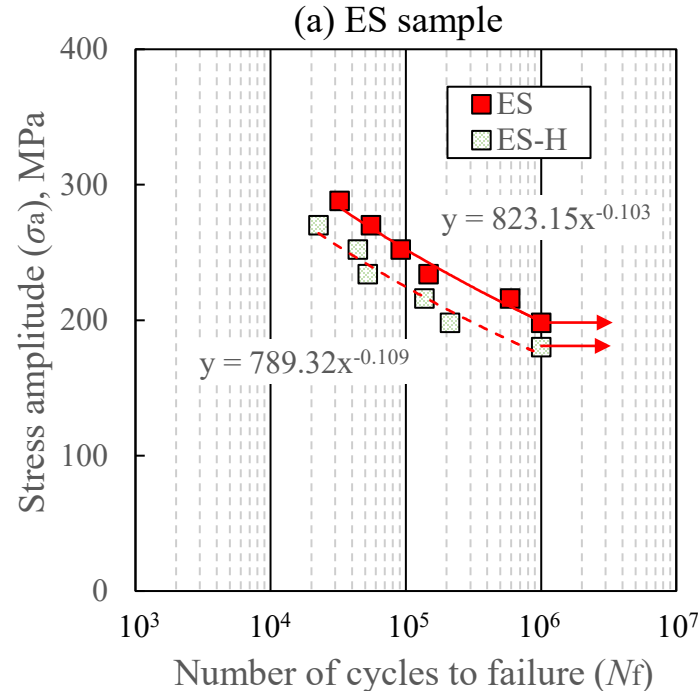


Figure 8: Relationship between stress amplitude and the number of loading cycles to fracture for the ES, PS_{low}, PS_{med}, and PS_{high} samples

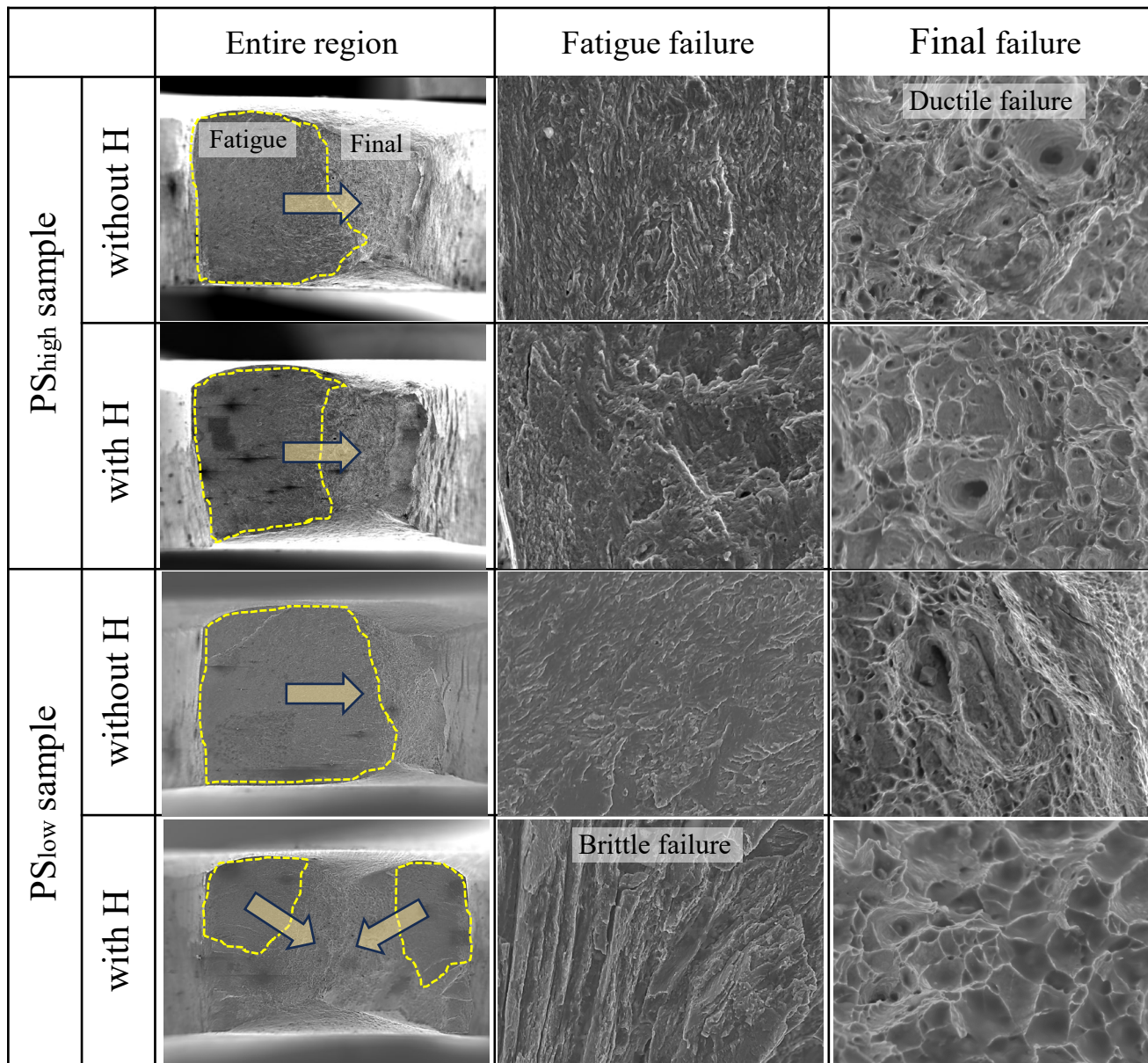


Figure 9: SEM images of fracture surfaces after the fatigue test for the PS_{low} and PS_{high} samples, with and without hydrogen charging.

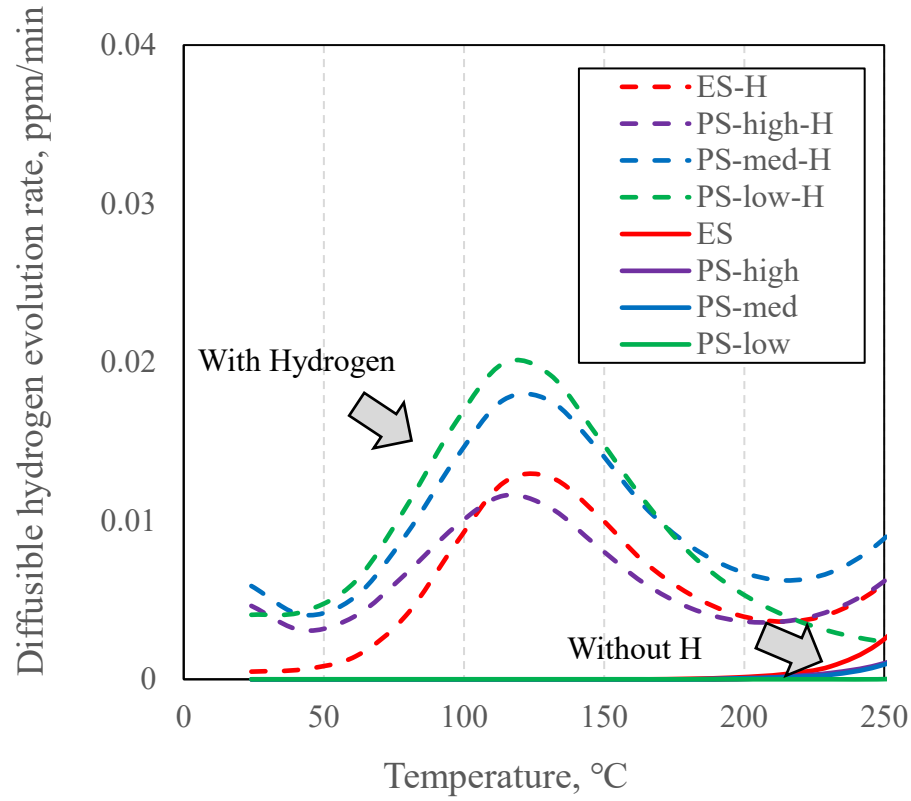


Figure 10: Variation in hydrogen evolution rate with temperature for the ES, PS_{low}, PS_{med}, and PS_{high} samples after hydrogen charging.

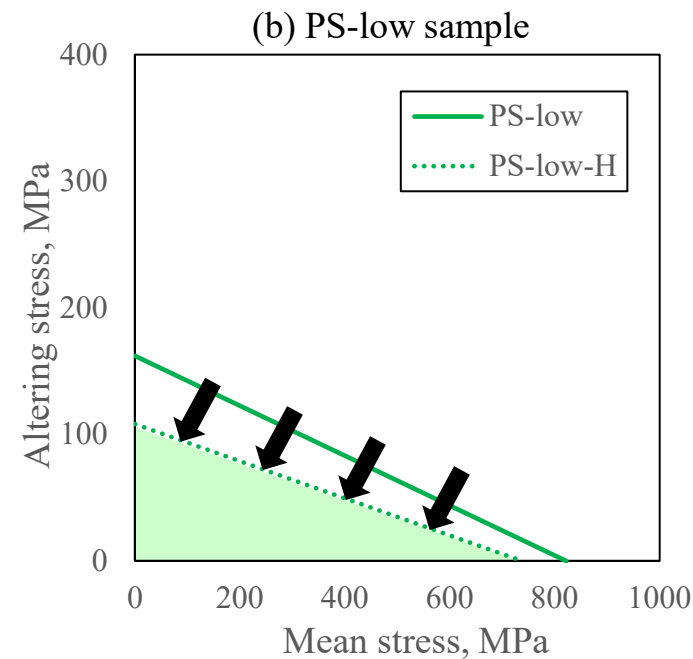
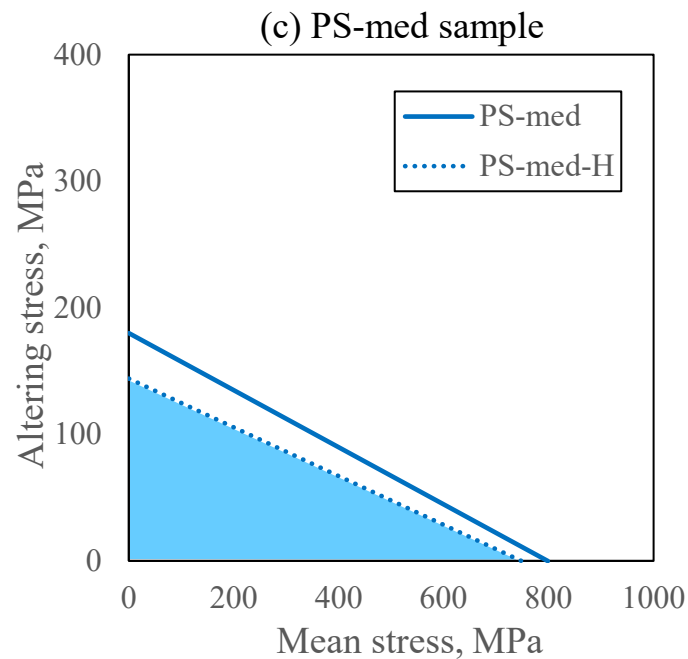
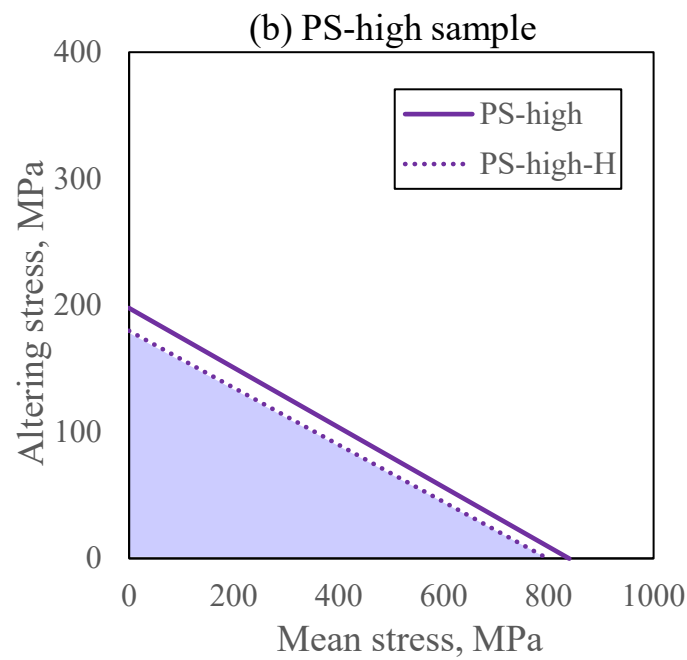
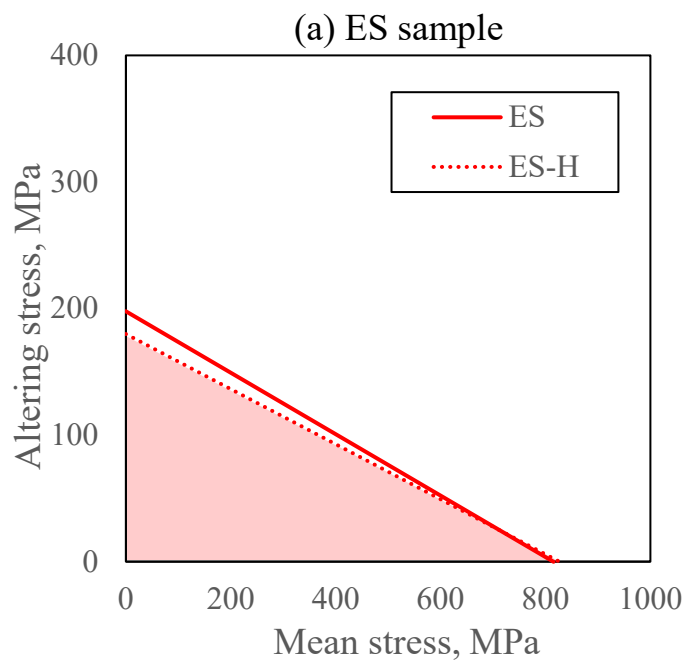


Figure 11: Modified Goodman diagrams for the ES, PS_{low}, PS_{med}, and PS_{high} samples with and without hydrogen charging.