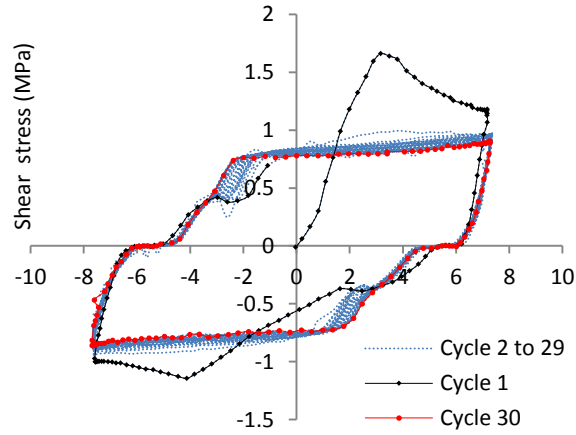
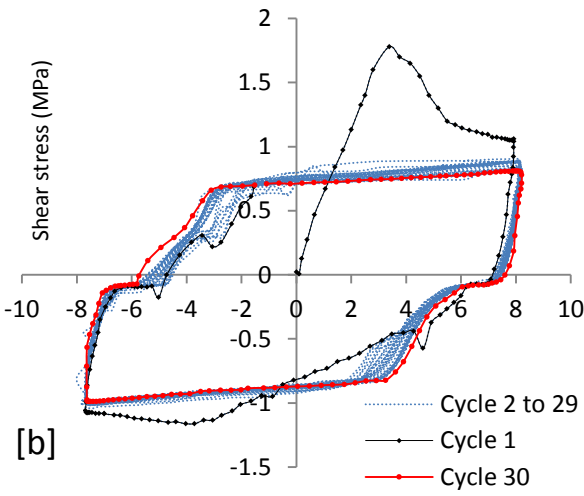


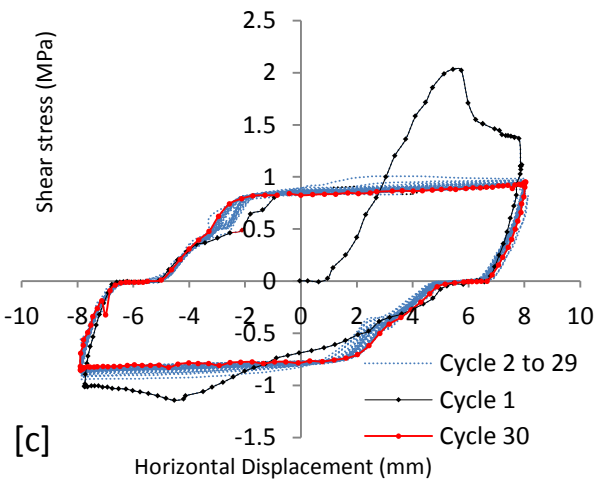
Shear stress,  $P=1$  MPa, ( $f_s=0.01, 0.05, 0.1$  Hz)



[a]

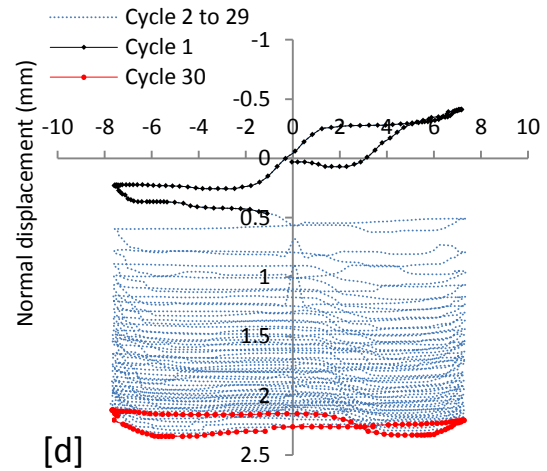


[b]

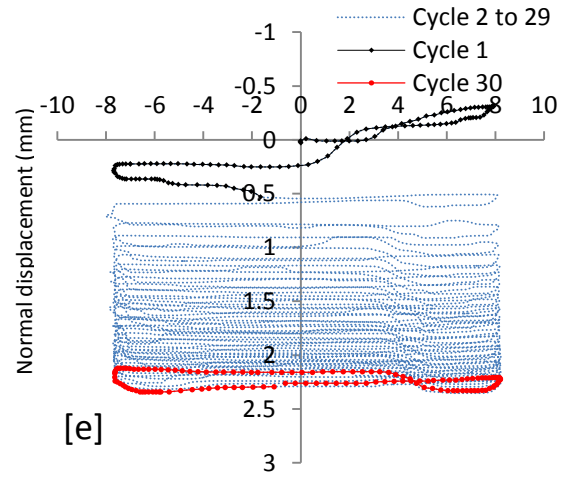


[c]

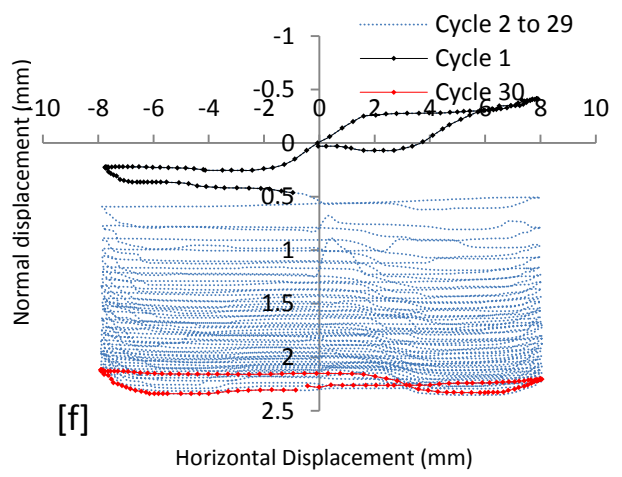
Normal displacement,  $P=1$  MPa, ( $f_s=0.01, 0.05, 0.1$  Hz)



[d]



[e]



[f]

**Fig. 13** Shear stress and normal displacement vs. horizontal displacement of 30°-30° joint for cyclic shear

load with different frequencies,  $f_s=0.01, 0.05$  and  $0.1$  Hz respectively ( $P=1$  MPa)