



Water Erosion Resistant Surface Treatments

Nitriding of Ti6Al4V

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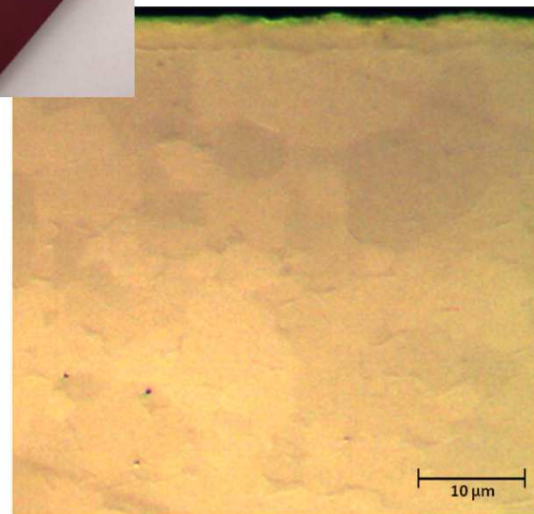
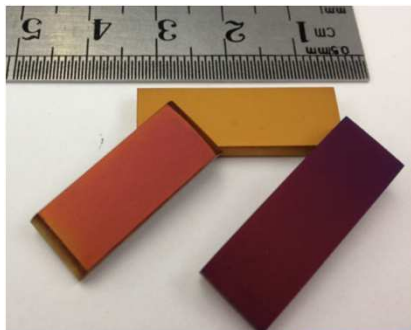


Gas nitriding of Ti6Al4V

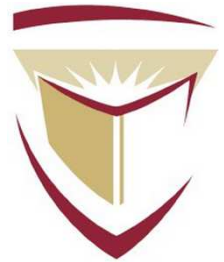
Concordia University



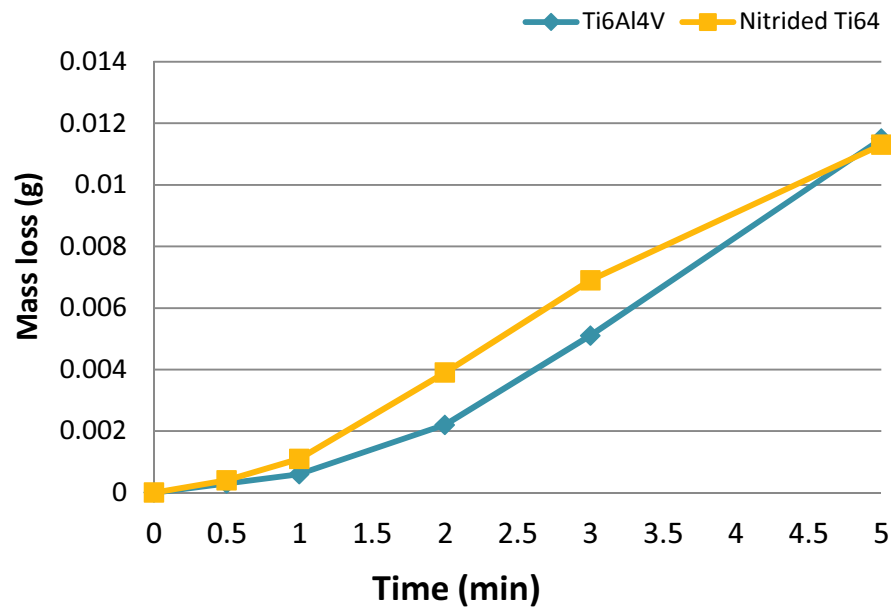
- Process parameters investigation for nitriding experiments is being studied as the following:



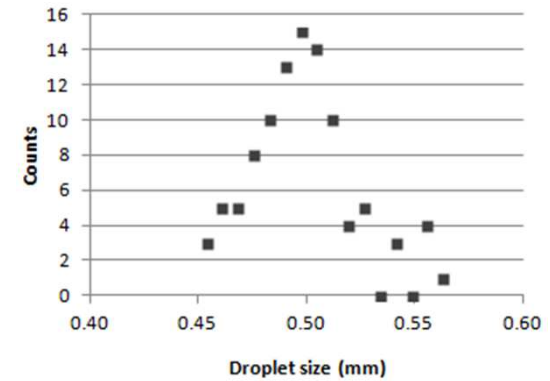
	Temperature (°C)	Time (h)	N ₂ flow (SCCM)
1	1050	10	25
2	1050	2	100
3	900	2	25
4	1050	10	100
5	900	10	25
6	1050	2	25
7	900	10	100
8	900	2	100



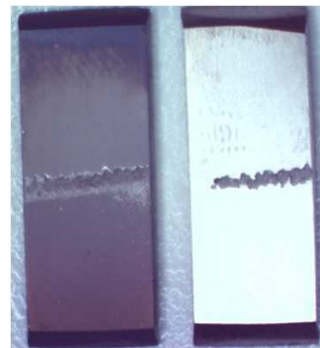
WDE of gas nitrided Ti6Al4V Coupons



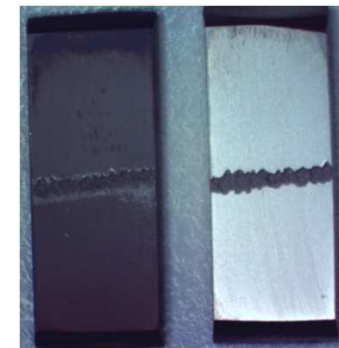
Ti6Al4V Nitrided
at 900 °C for 3 hours
Impinging speed= 350 m/s
Flow 0.04 L/min



After 1 min



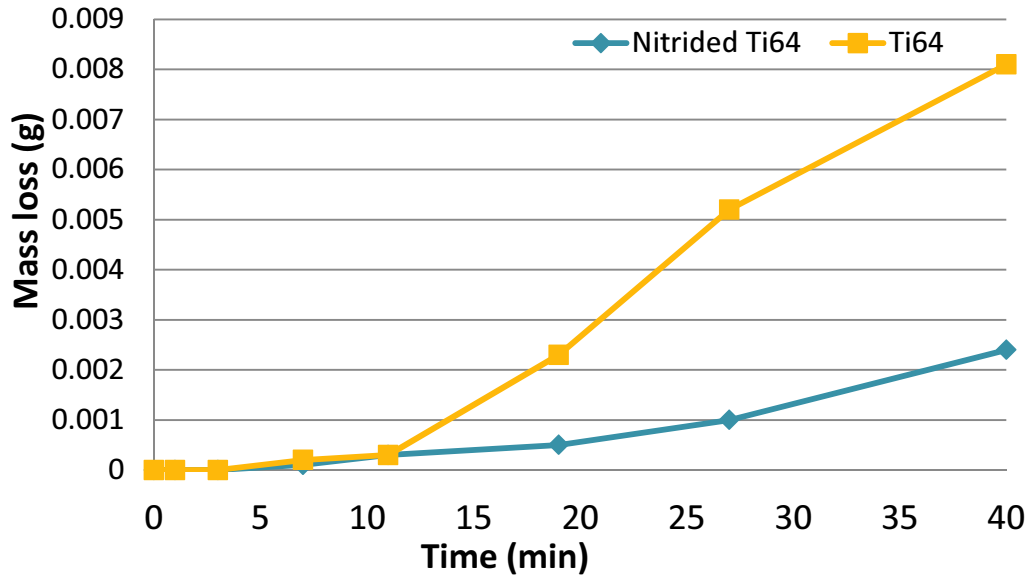
After 3 min



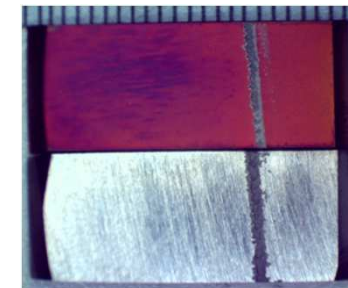
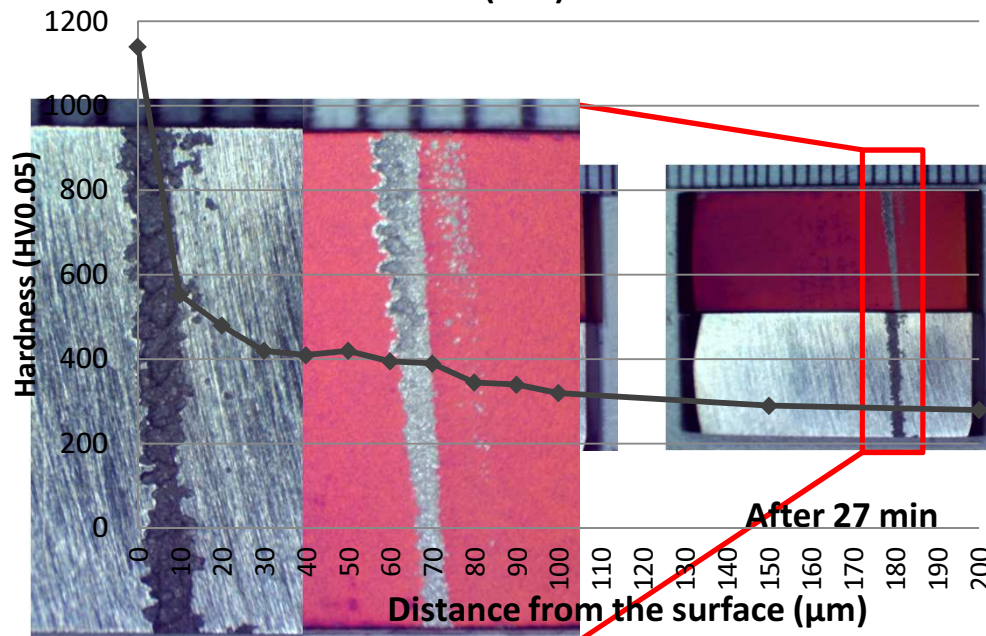
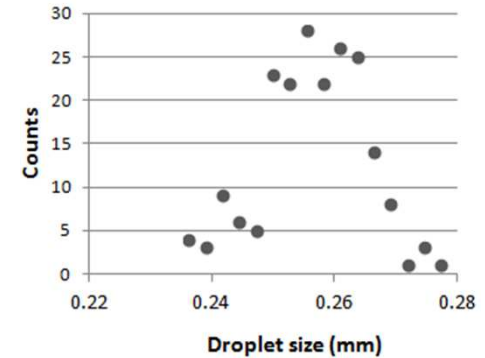
After 5 min



WDE of gas nitrided Ti6Al4V Coupons



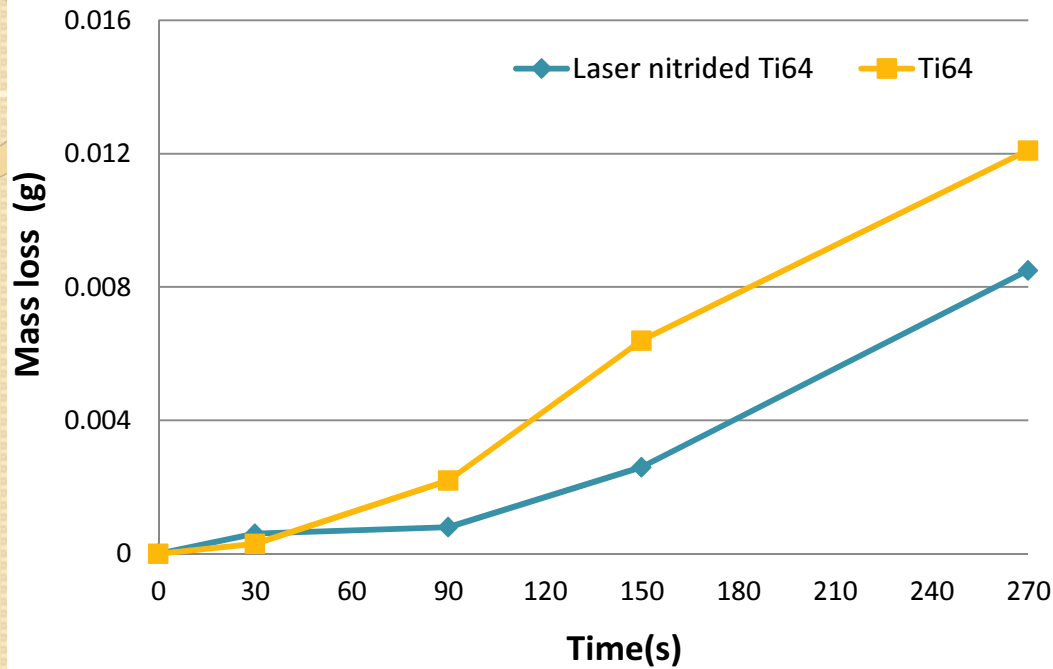
Ti6Al4V Nitrided
At 900 °C for 5 hours
Impinging speed= 350 m/s
Flow 0.04 L/min



After 27 min

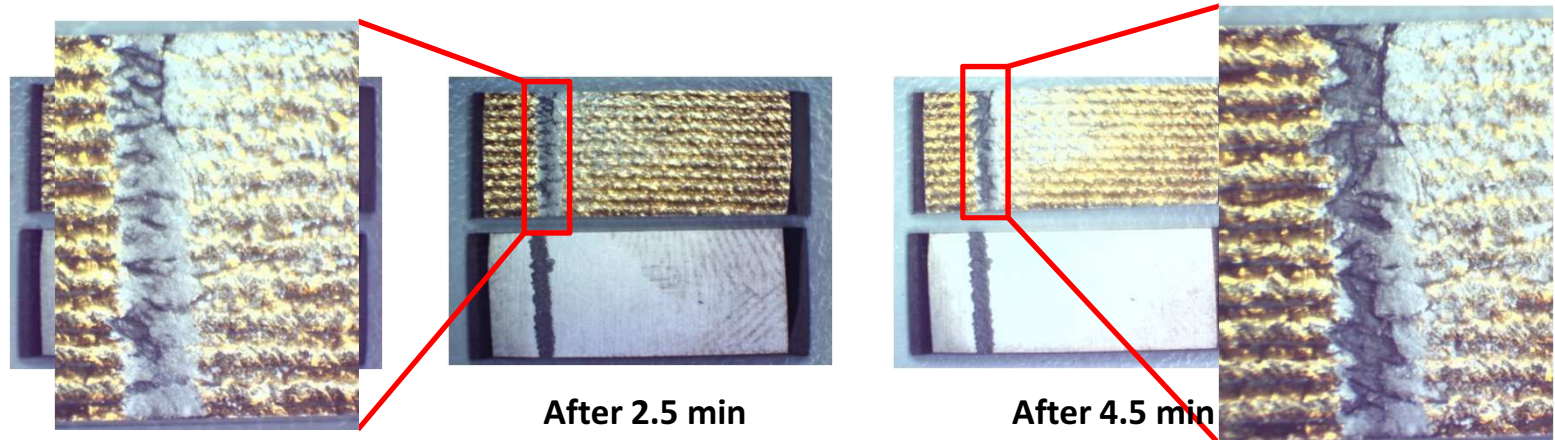
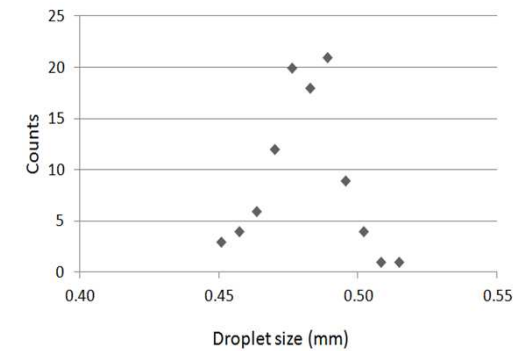
After 40 min

WDE of laser nitrided Ti6Al4V Coupons



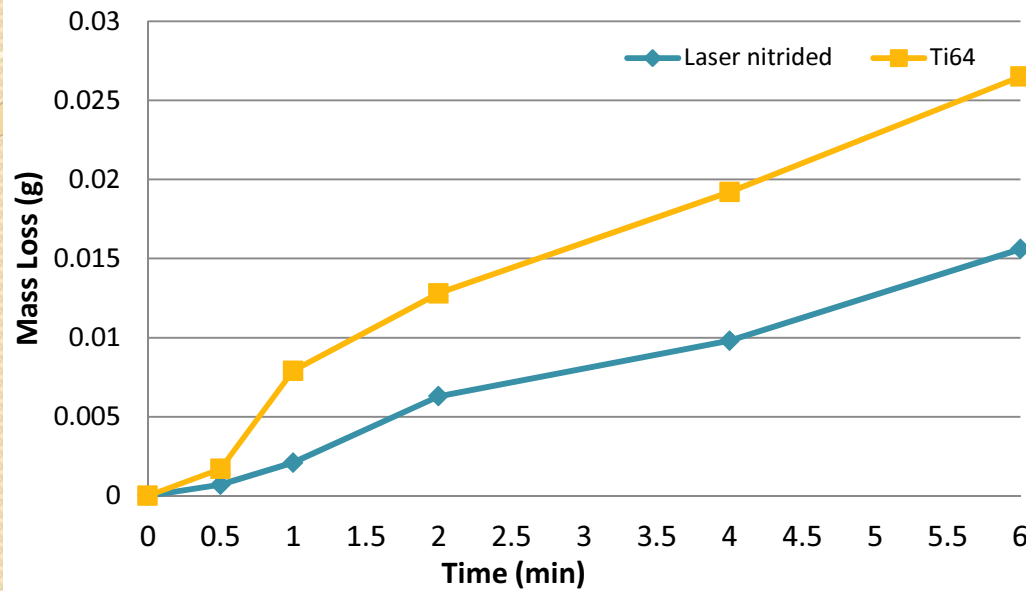
**Ti6Al4V Laser Nitrided
at 1 KW, N₂:Ar=1:1, 60% overlapping**

**Impinging speed= 350 m/s
Flow 0.05 L/min**



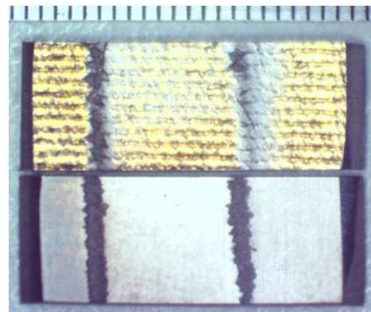
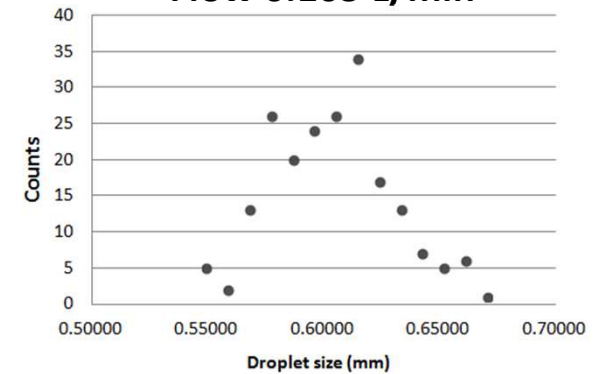


WDE of laser nitrided Ti6Al4V Coupons



Ti6Al4V Laser Nitrided
at 1 KW, $N_2:Ar=1:1$, 60%
overlapping

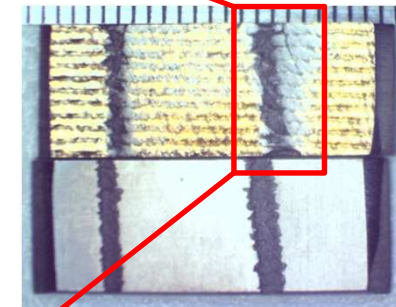
Impinging speed= 350 m/s
Flow 0.105 L/min



After 1 min



After 2 min



After 6 min

QUESTION

THANK YOU