[illegible]

[illegible]

[illegible]*[illegible]

[illegible]

[illegible]

*yhchang@itri.org.tw

- [illegible]

[illegible]10%~30%[illegible]

- [illegible]

[illegible]

- [illegible]

[illegible]([illegible])

1. 304[illegible]([illegible]0.8mm)
2. [illegible]([illegible]2[illegible])

3. □□□□□□

□□□□□Nd:YVO_4

□□□75kHz

□□□□□2.5W

□□□□□□1064nm

□□□□□□38um

□□□□□□0.1ms

□□□□□□10ns

□□□□□□□□□20um

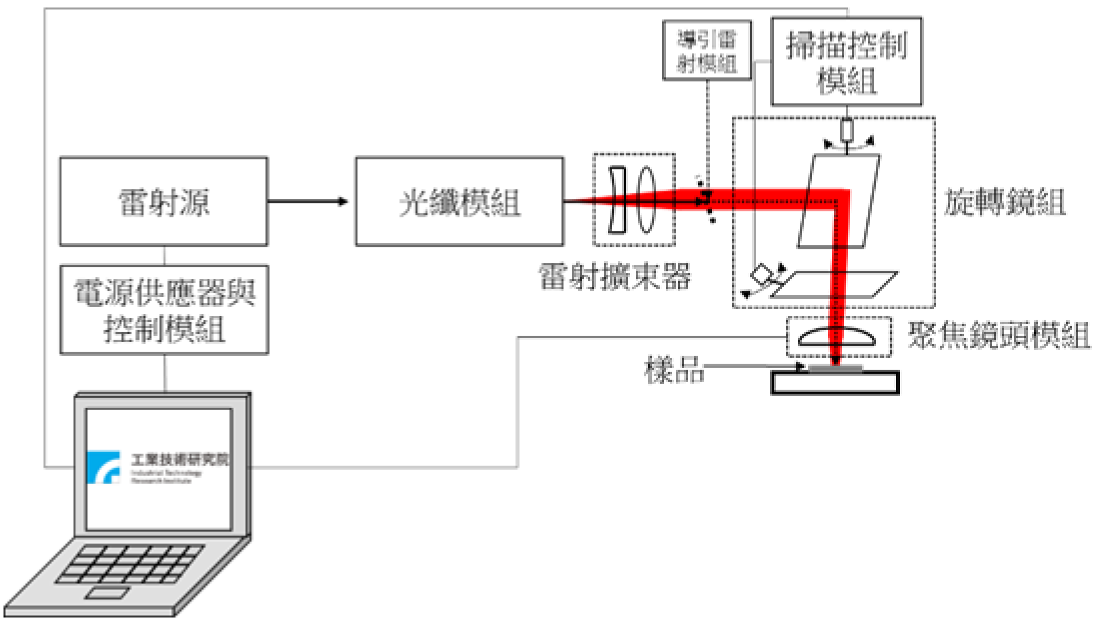
□□□□□□□45~190mm/s

- □□□□

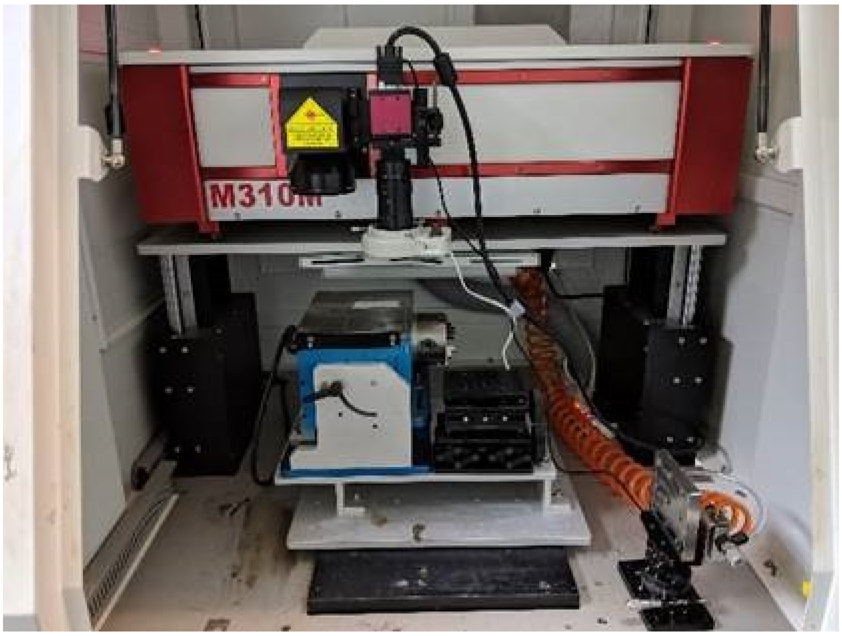
1. □□304□□□□□□□□□□□75%□□□□□□□□□□□□□
2. □□□□□AutoCAD□□□□□□□□□□□
3. □□□□□□□□□□□□□□□□□□□□□□□□
4. □304□□□□□□□□□□□□□□□□□□
5. □□□□□□□

- □□□□□□□□

□□□(Radiation source)□□□□□□□□□□□(Power & control module)□□□□□(optical fiber)□□□□□(Beam expander)□□□□□□(Guide laser module)□□□□□□□(Scanner control unit)□□□□□□(Rotating mirrors)□□□□□□□(Focus lens module)□□□□□□□□1□□2□□□



□1□□□□□□□□□□□□



[illegible]2[illegible]

- [illegible]

- [illegible]

[illegible]304[illegible]10-15%[illegible](Cr_2O_3)[illegible]Cr_2O_3[illegible]3[illegible]Cr_2O_3[illegible]nm[illegible][1][illegible]Cr_2O_3[illegible][1-4][illegible]Cr_2O_3[illegible]Cr_2O_3[illegible]

[illegible]C-1[illegible]C-1[illegible]Cr_2O_3[illegible]C-1[illegible]3[illegible]A-10[illegible]A-10[illegible]Cr_2O_3[illegible]A-10[illegible]3[illegible]Cr_2O_3[illegible]Cr_2O_3[illegible]([illegible])[illegible]

圖3(A)

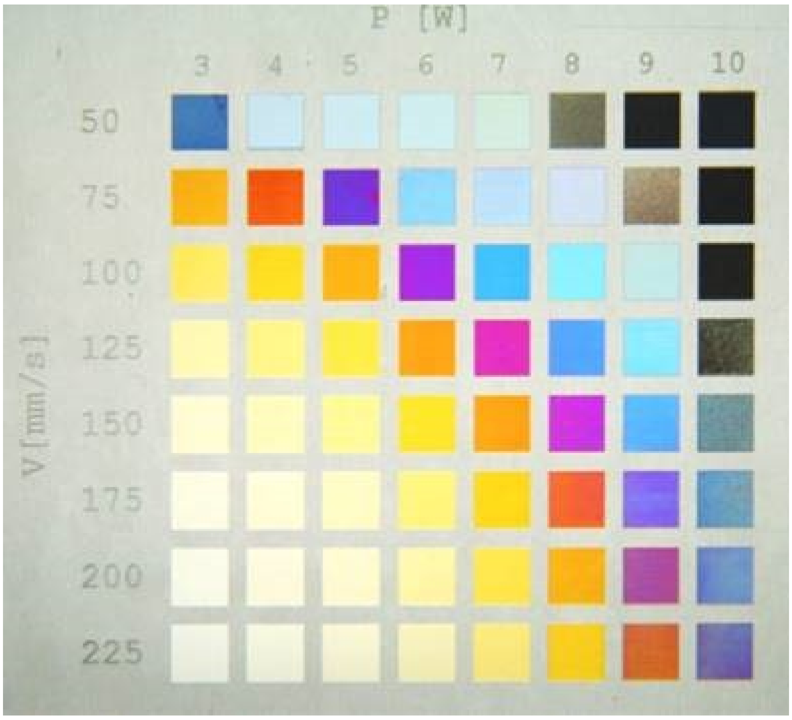
圖3(B)

A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10
145 mm/s	150 mm/s	155 mm/s	160 mm/s	165 mm/s	170 mm/s	175 mm/s	180 mm/s	185 mm/s	190 mm/s
B-1	B-2	B-3	B-4	B-5	B-6	B-7	B-8	B-9	B-10
95 mm/s	100 mm/s	105 mm/s	110 mm/s	115 mm/s	120 mm/s	125 mm/s	130 mm/s	135 mm/s	140 mm/s
C-1	C-2	C-3	C-4	C-5	C-6	C-7	C-8	C-9	C-10
45 mm/s	50 mm/s	55 mm/s	60 mm/s	65 mm/s	70 mm/s	75 mm/s	80 mm/s	85 mm/s	90 mm/s

□3□□□□□□□□□□□□□□□□□□□□□□□□□□□□3(A)□□A-1□□□□A□□□□□□□□□□3(B)□□3(A)□□□□□□□□□□□□□□□□□□□□(mm/s)□

- □□

□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□4□□Ti□□□□TiO_2□□□□TiO_2□□□□□□□□□□□□□□□□□□□□□□□TiO_2□□□□□□□□□□□[5]□



[illegible]4[illegible][5][illegible]

([illegible]Antończak, A. J. et.al, (2014). The influence of process parameters on the laser-induced coloring of titanium. *Applied Physics A*, 115(3), 1003-1013.)

- [illegible]

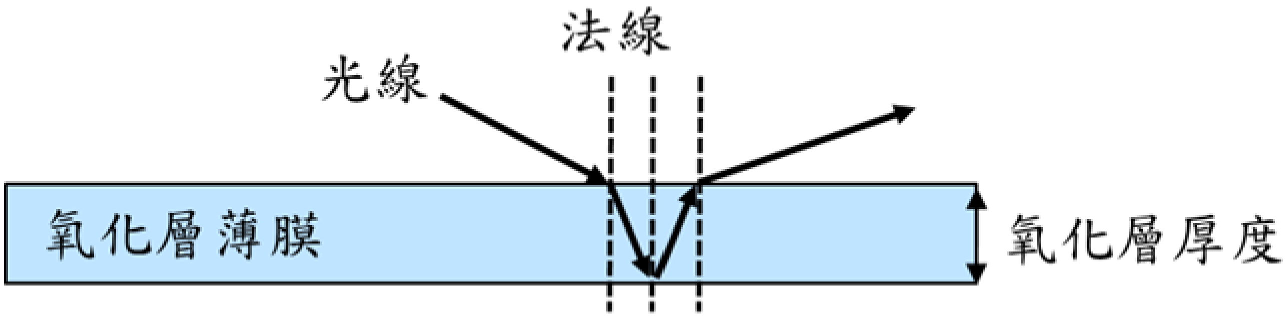
$$4Cr_{(s)} + 3O_{2(g)} \longrightarrow 2Cr_2O_{3(s)}$$ ————(1)

$$Ti_{(s)} + O_{2(g)} \longrightarrow TiO_{2(s)}$$ ————-(2)

- [illegible]

[illegible]1621[illegible](Willebrord Snellius)[illegible](Snell’s Law)[illegible](Refractive index)[illegible](Refraction)[illegible]1666[illegible](Isaac Newton)[illegible](Dispersion)[illegible]

[illegible](Activation Energy)[illegible](Cr_2O_3)[illegible](TiO_2)[illegible]([illegible])[illegible]5[illegible]



[illegible]5[illegible]

- [illegible]

1. [illegible]
2. [illegible]

- [illegible]

https://drive.google.com/open?id=1eeJW9h_8WOYwye5anKR1YjXI71a6QmyG

- [illegible]

[illegible](Ex: [illegible])[illegible](Ex: [illegible])[illegible](Ex: [illegible])[illegible]([illegible])[illegible](Ex: TiO_2[illegible]Cr_2O_3)[illegible](Ex: SiO_2)[illegible](Thin-film)[illegible]

- [illegible]

[illegible]

- [illegible]

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