



/ -

Ta Te₂

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..... **TaTe₂** - -
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Abstract

The laser ablation system consisting of a vacuum chamber and Nd-YAG laser has been built for depositing **TaTe₂** on three different substrates (Silicon, glass and Aluminum). The surface topography of the prepared thin films has been studied by atomic force microscopy was characterized by using X-ray diffraction. The crystallinity of (AFM). **TaTe₂** powder the thin films was examined by X-ray diffraction (XRD), The results show no peaks . indications to the Ta₃N₅ corresponding **TaTe₂**, but there are some

Key words: Laser ablation, Thin films, **TaTe₂**.

(
Nd-YAG
)
TaTe₂
TaTe₂
Ta₃N₅
TaTe₂
TaTe₂ - - :

Cluster)

(- -)

. GW/ cm²

()

()

[3]

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[]

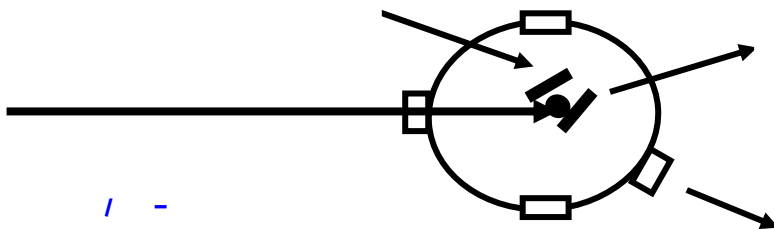
)

[7 - -]

C₆₀

Nd-YAG

TaTe₂



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:

Nd-YAG

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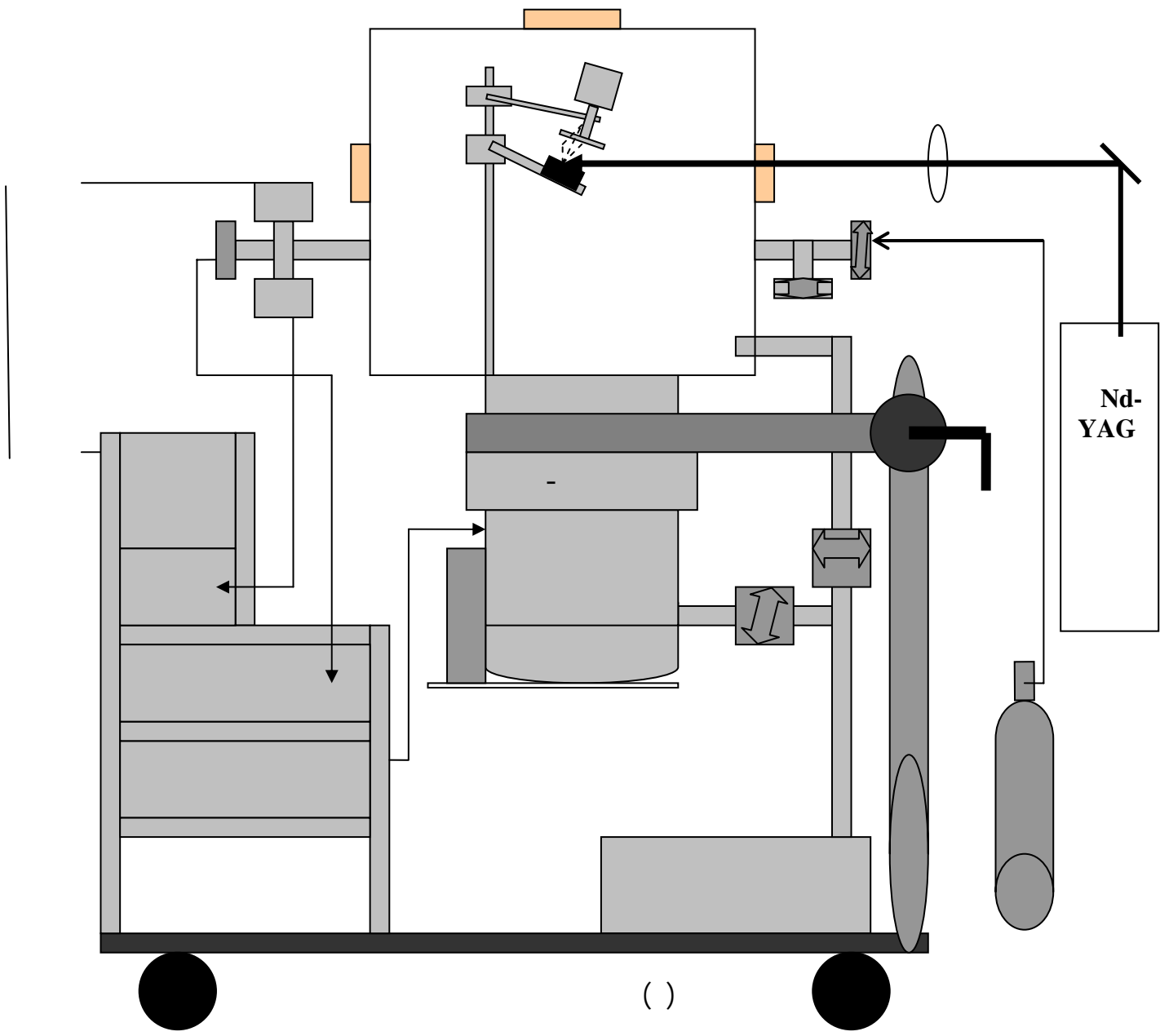
Nd-YAG
mJ

($\lambda = 532nm$)

(1064 nm)
RD- YG- 300

Q-Switch Pulse Nd -YAG
.10 Hz ns

Scientich PHF 50



(BK7)
()

(DC- motor)

/ Alcatel

/ TV 301 Navigator
 10^{-3} mbar

10^{-7} mbar

/ -

(He-Ne)

10^{-7} mbar

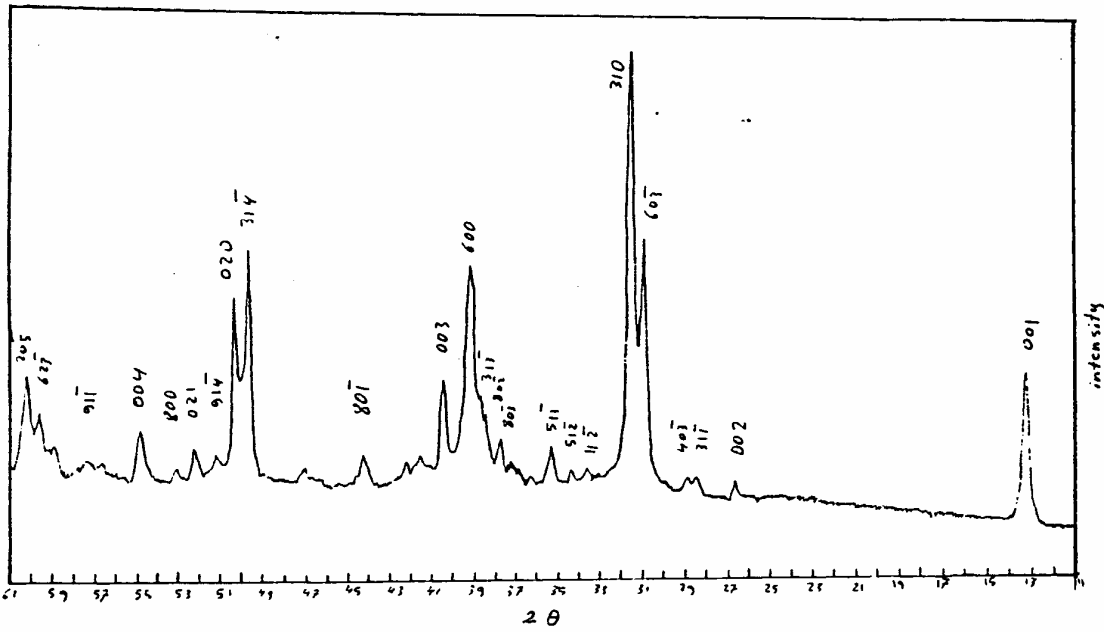
TaTe₂

() TaTe₂
 10^{-2} - 10^{-3} mbar

100

100

[]



XRD

TaTe₂

TaTe₂

(Cu K_α = 1.54178 Å Phillips PW1729)

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TaTe₂

TaTe₂

.PULVERX

[]

0.00

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TaTe₂

٢-١ توصيف طبوغرافية السطوح للأغشية المحضرة:

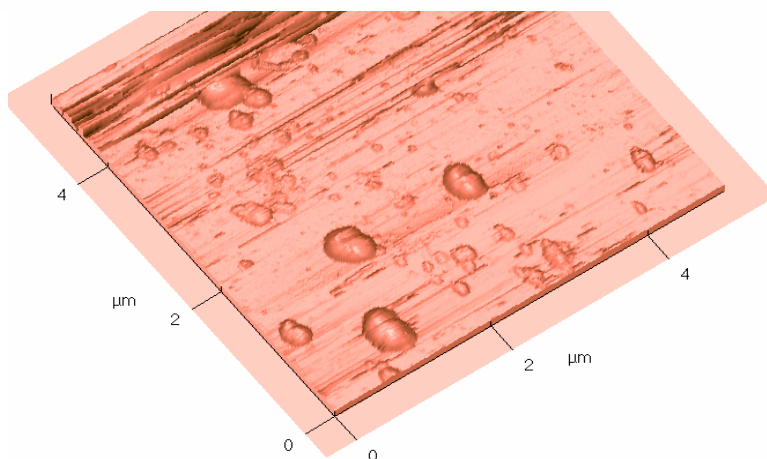
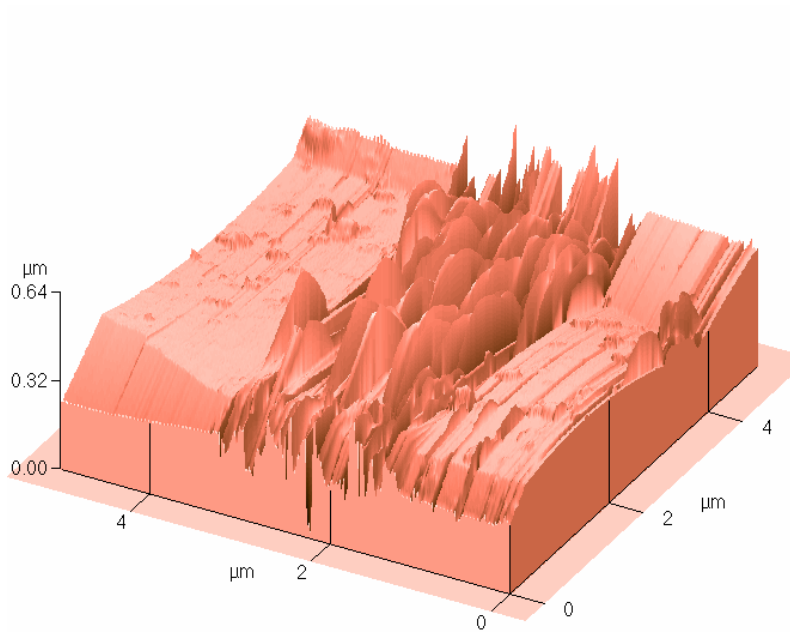
(AFM)

Auto Probe CP

5 X 5 μm²

()

.()



. TaTe₂

()

5

.TaTe₂

TaTe₂

()

(RMS: Root-mean squared)

()

(valley

(-1)

(6-2)

Ave

()

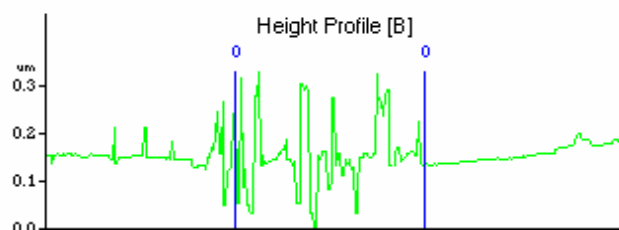
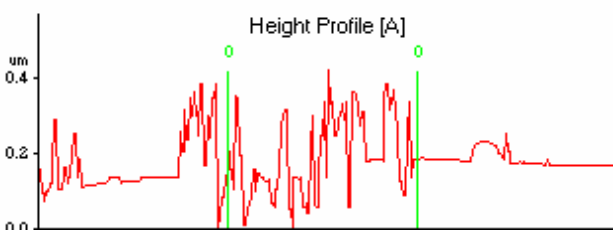
6-1

Peak to)

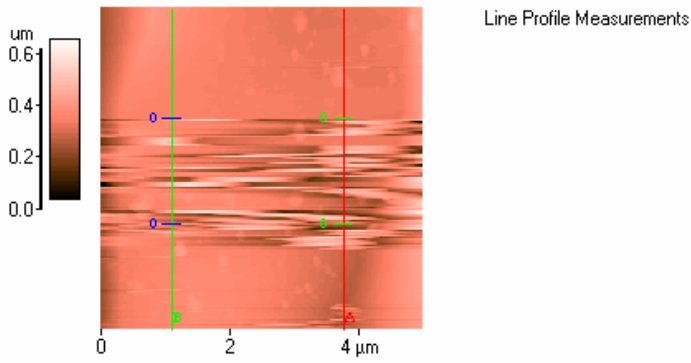
A, B

.A, B

400



(1)



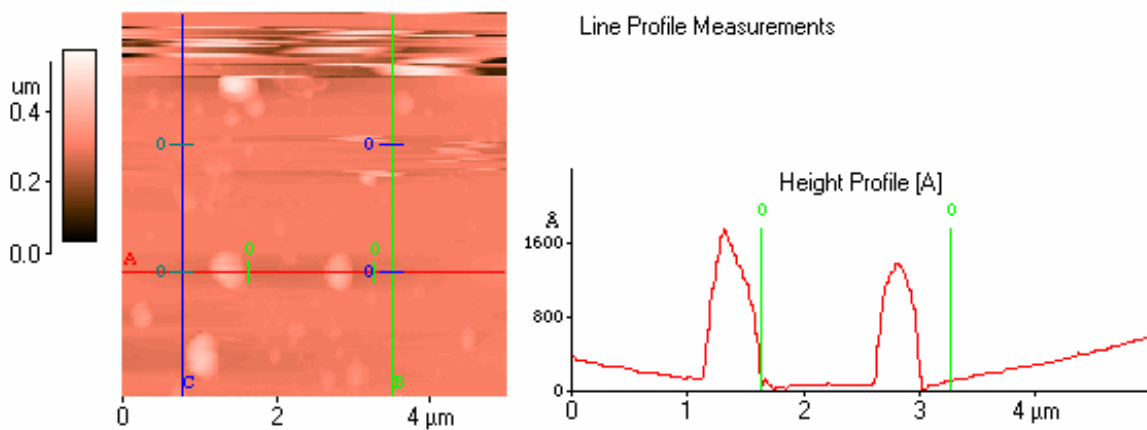
(2)

-2

-1 ()

()

Line	Height	R _{p-v}	Rms	Ave	Mean Ht	Median Ht
[A]	0: 222 A°	0.418 um	779 A°	565 A°	0.328 um	0.321 um
[B]	0: 416 A°	0.332um	456 A°	259 A°	0.368 um	0.363um
Ave	319 A°	0.375 um	618 A°	412 A°	0.348 um	0.342 um



.()

1500

-2

-1 ()

٢-٢ توصيف البنية البلورية لأغشية TaTe₂

2.5 mm

XRD
()

(2)

TaTe₂
(

1mm

(1)

()

From 2 to 60	2θ	
Speed (2θ/Sec)	0.02	
Chart (2θ/mm)	10	
Range (E=10)	2E4	
T.C. (constant)	2.0	
Slit (mm)	0.1	
KV	40	
mA	2.5	

TaTe₂

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1°

XRD

. Laboratoire de Cristallographie CNRS

0.6°

. [] Ta₃N₅

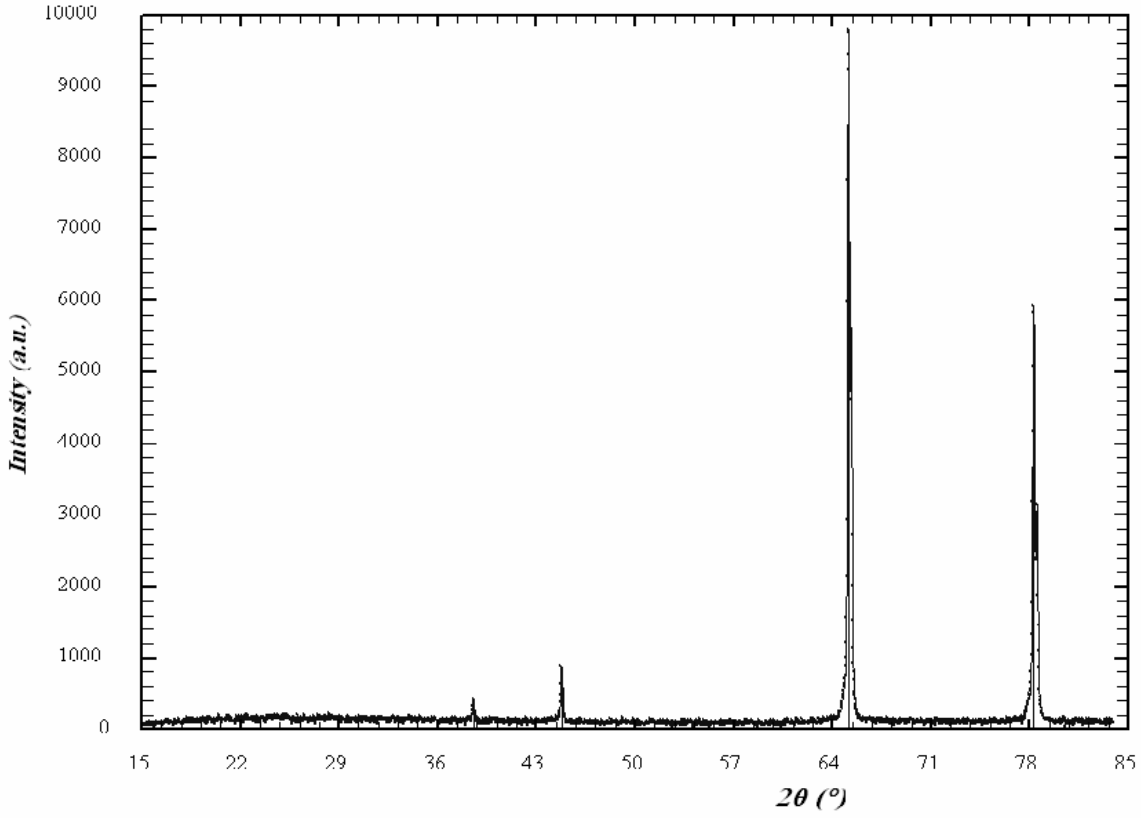
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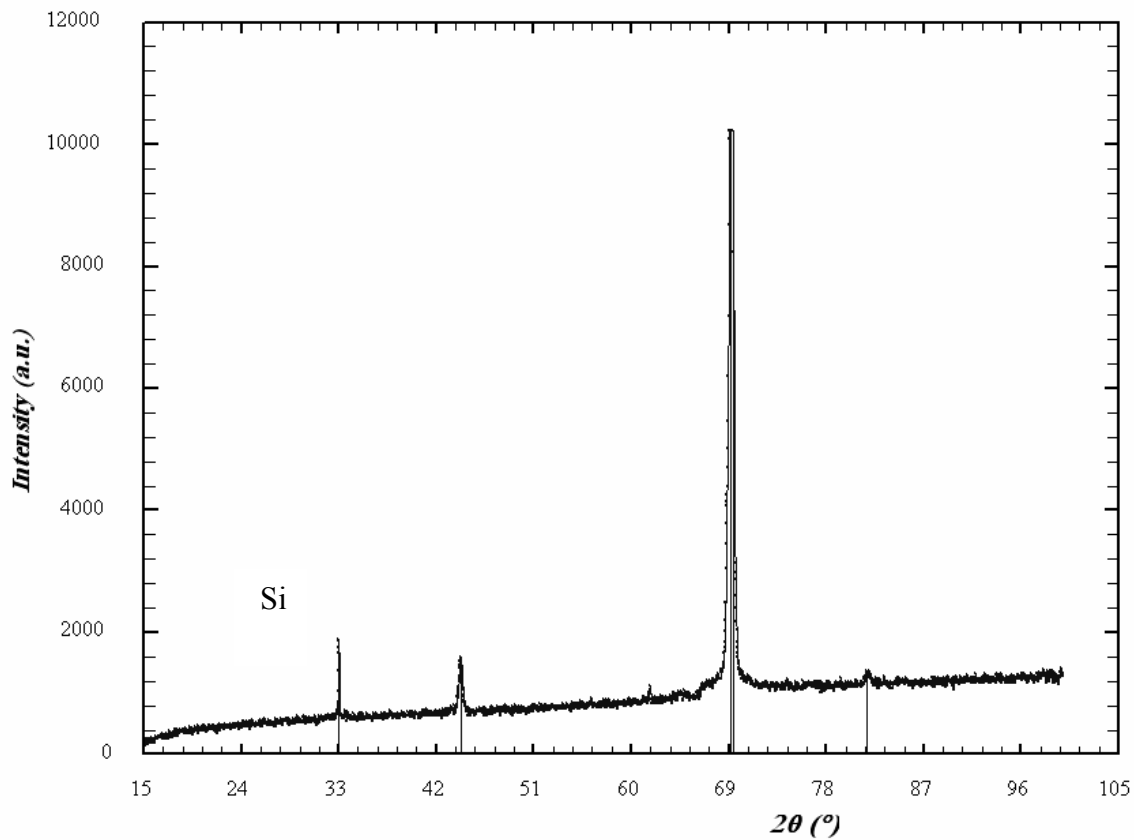
()



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Aluminum	System	Space group	2θ (Exp)	2θ	d	h k l
Al	Cubic	Fm-3m (225)				
			38.519	38.439	2.3400	1 1 1
			44.773	44.833	2.0200	2 0 0
			65.150	65.186	1.4300	2 2 0
			78.278	78.306	1.2200	3 1 1



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Tantalum Nitride	System	Space group	2θ (Exp)	2θ	d	h k l
Ta ₃ N ₅	Monoclinic	C2/m (12)				
			44.260	44.237	2.0458	4 0 3
			68.810	68.579	1.3673	7 1 0
			69.245	69.275	1.3552	-1 1 7
			81.949	81.879	1.1756	3 3 2

TaTe₂

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TaTe₂

AFM

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