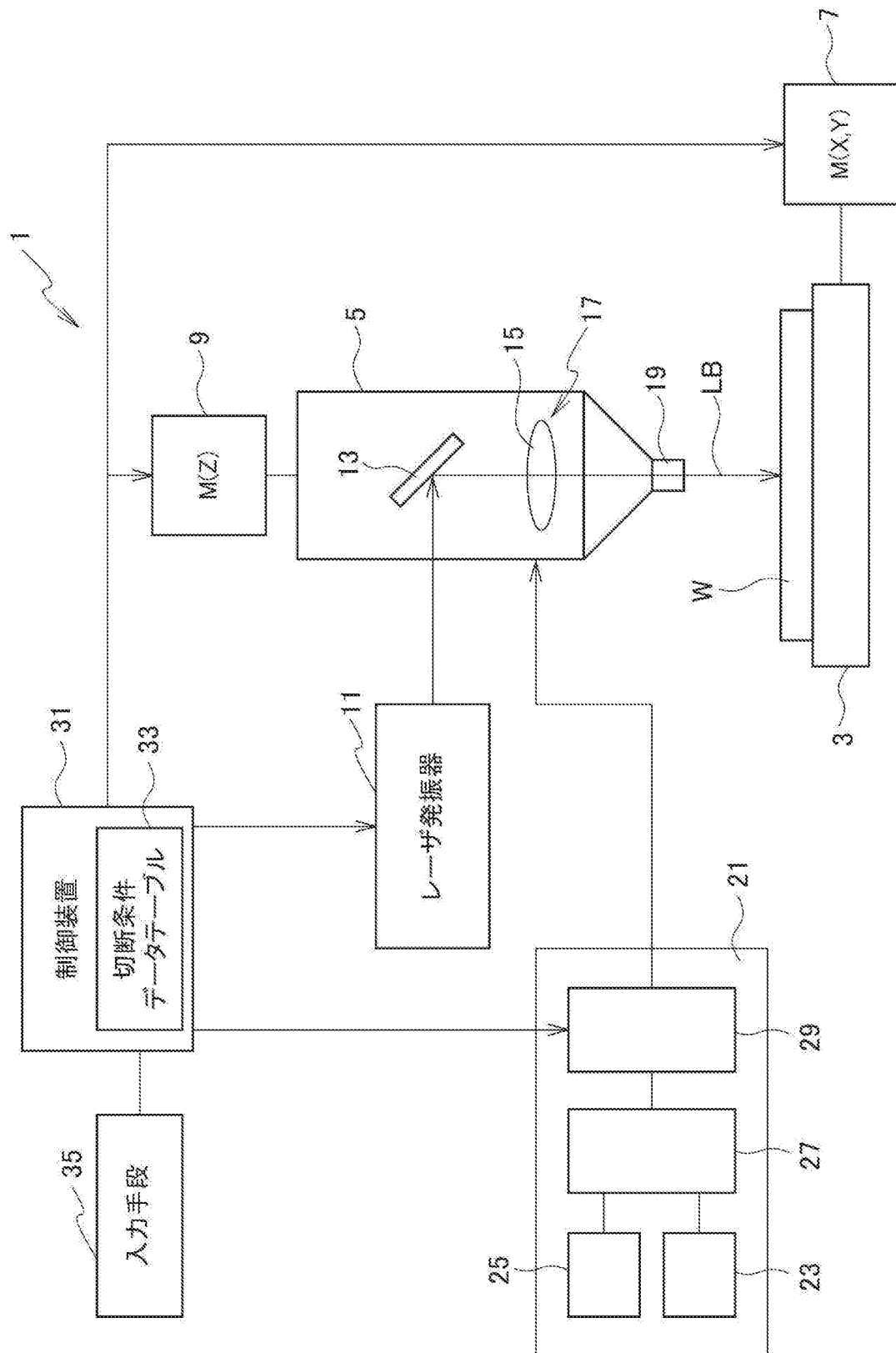
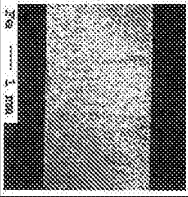
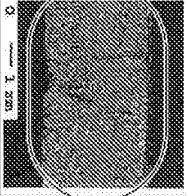
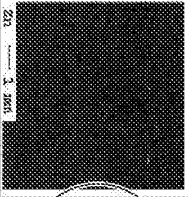
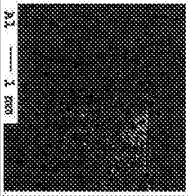
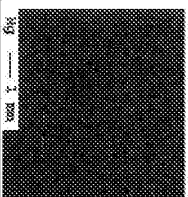
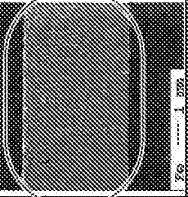
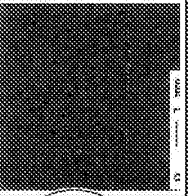
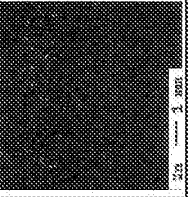
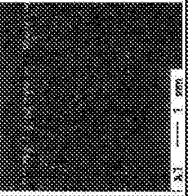
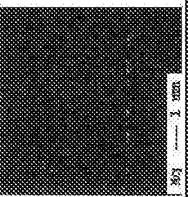
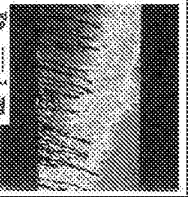
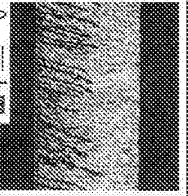
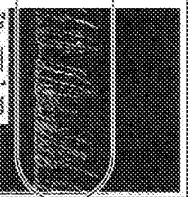
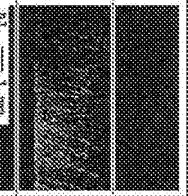
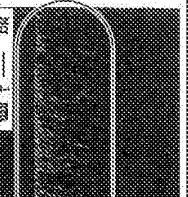


[図1]

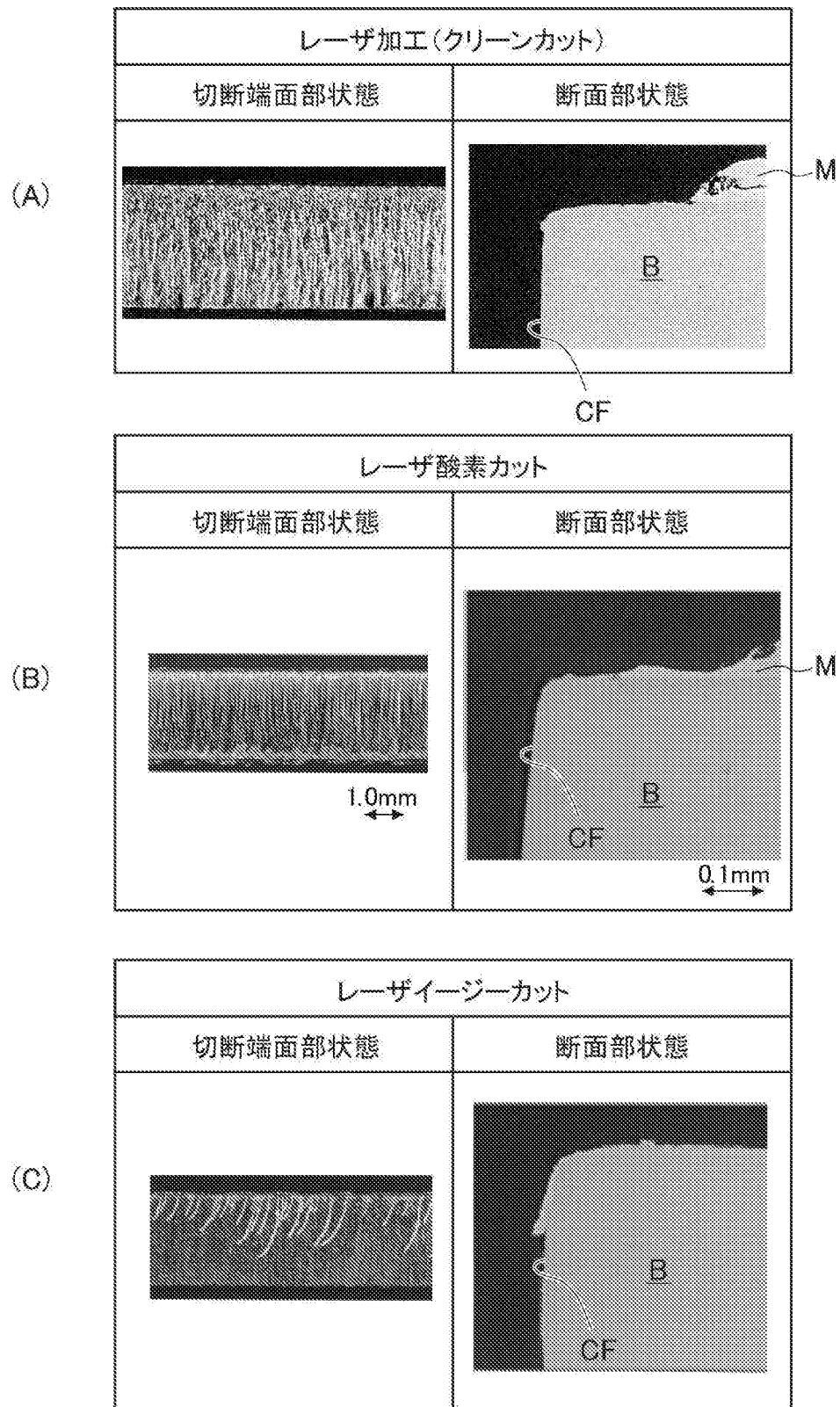


[図2]

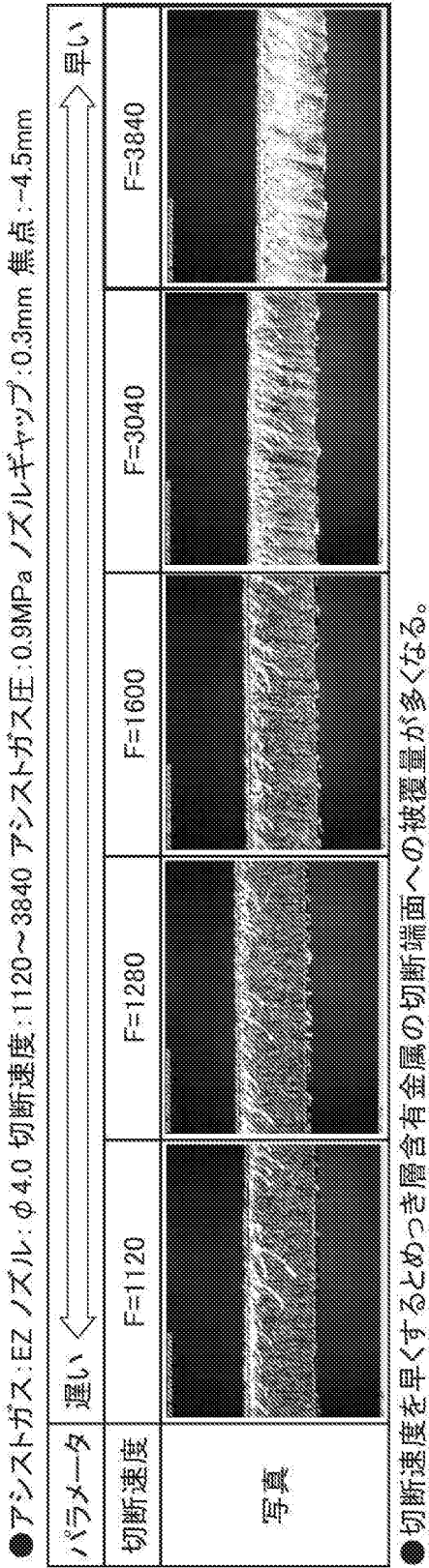
めっき鋼板をレーザーで切断加工したときの切断端面の「EPMA※」分析を切断条件別に行った。

加工方法	Fe	O	Zn	Al	Mg	記
酸素カット						切断端面部は一面酸化皮膜に覆われている。
クリーンカット						切断端面部には、酸化皮膜等はなく、素材成分のみが現れている。
イージーカット						切断端面に薄い酸化皮膜が現れている。また、めっきの成分が切断端面上部に現れている。

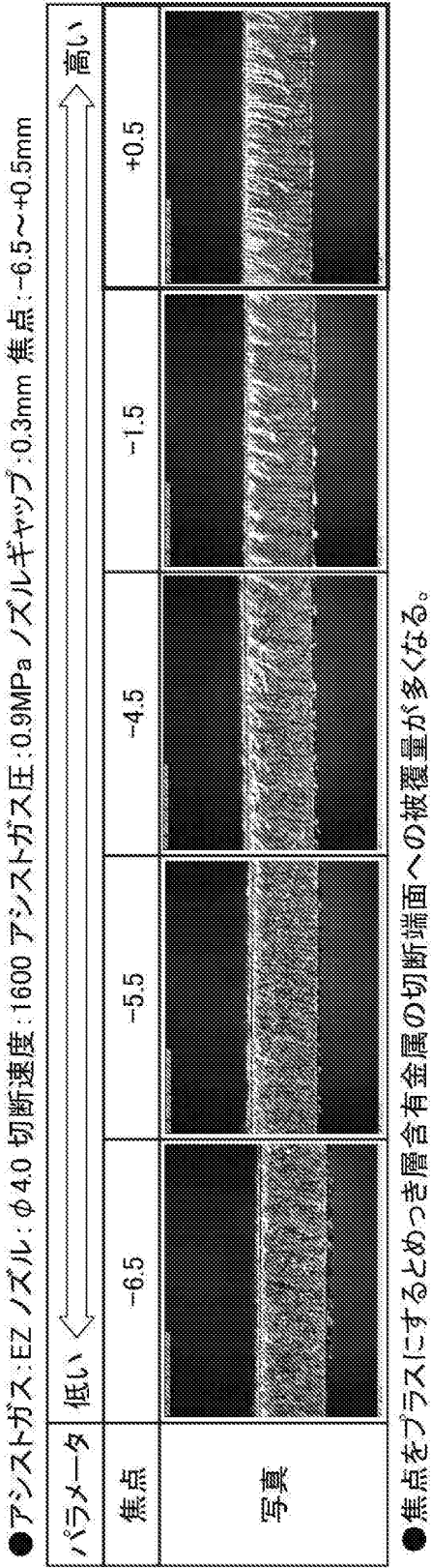
[図3]



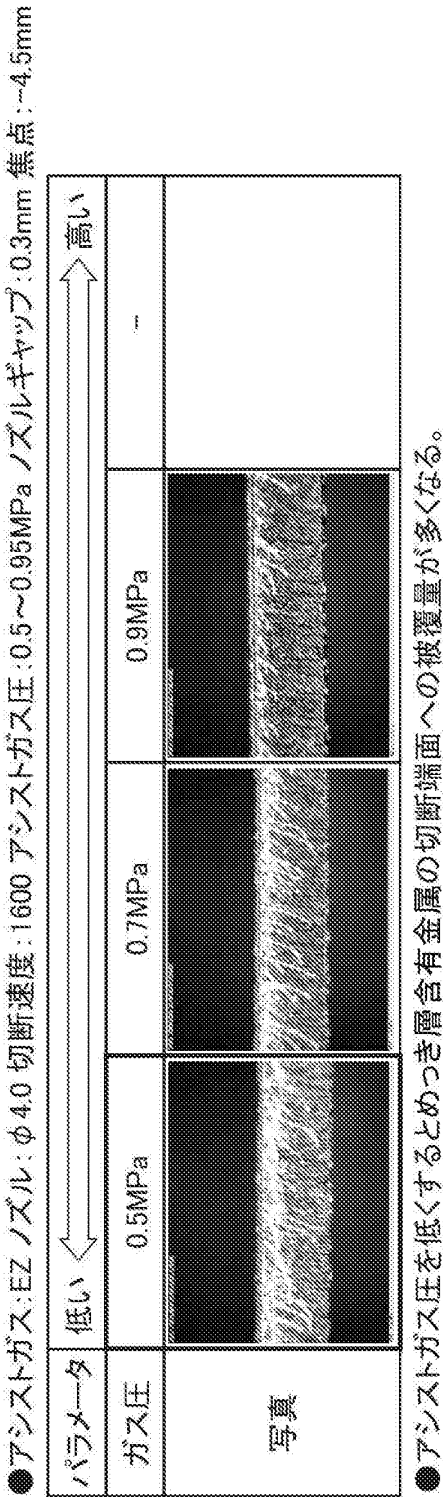
[図4]



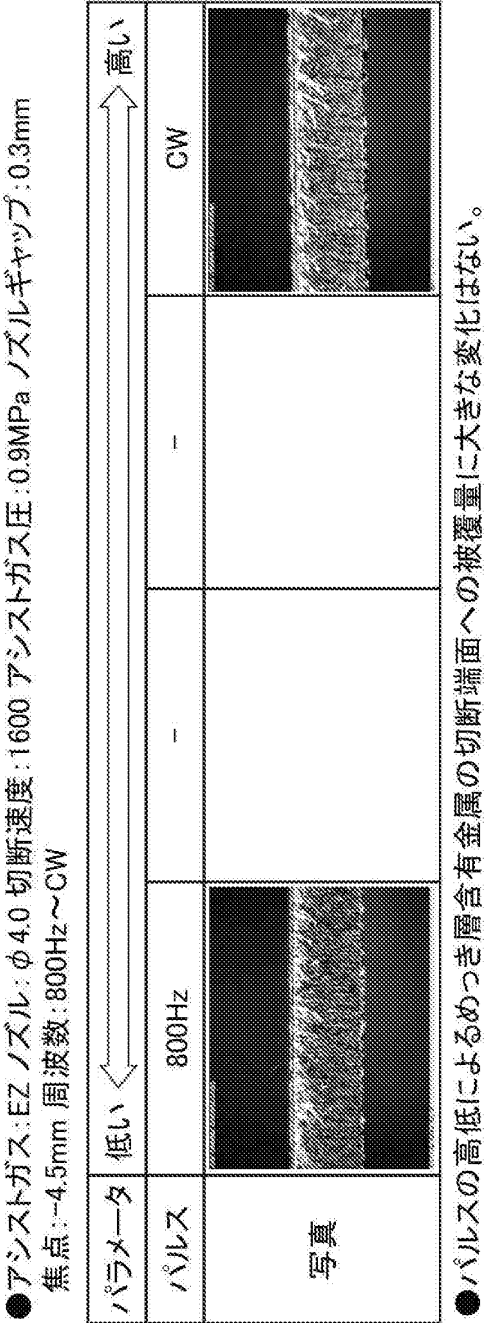
[図5]



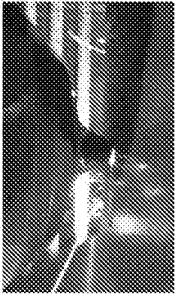
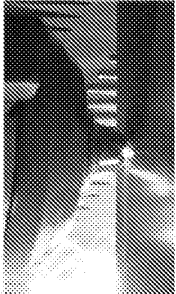
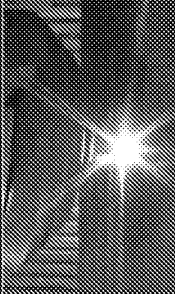
[図6]



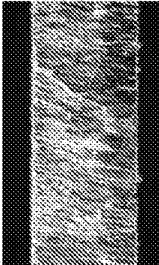
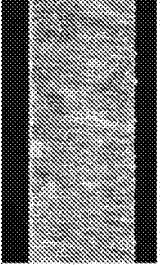
[図7]



[図8]

状態	記号	プラズマ状態
プラズマの発生無し	無	
弱いプラズマ発生	p	
プラズマが発生	P	

[図9]

状態	記号	写真
サビの発生なし	○	
サビ発生有り	×	

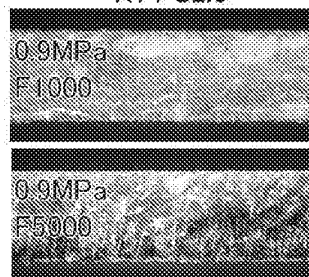
[図10]

暴露開始1ヶ月後板厚 $t=2.3\text{mm}$ 焦点位置: -0.5mm

めっき付着量			K14								
ノズル径(mm)			S2.0			D4.0			D7.0		
アnstガス圧(MPa)			0.9	0.7	0.5	0.9	0.7	0.5	0.9	0.7	0.5
板 $t=2.3$	切断速度 mm/min	1000	無×	無×	無×	無×	無×	無×	p×	p×	p×
		2000	無×	無×	無×	無×	無×	無×	p×	p×	p×
		3000	P×	P×	PO	PO	PO	PO	pO	pO	pO
		4000	P×	PO	PO	PO	PO	PO	PO	PO	PO
		5000	P×	PO	PO	PO	PO	PO	PO	PO	PO

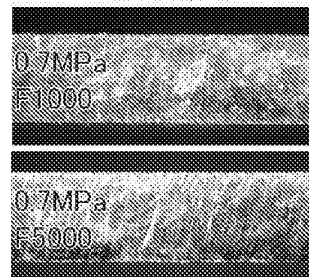
(A)

K14 S2.0



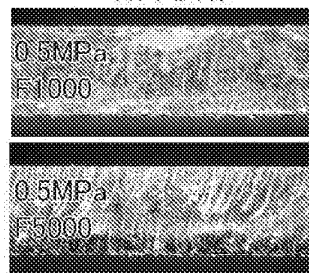
(B)

K14 D4.0



(C)

K14 D7.0



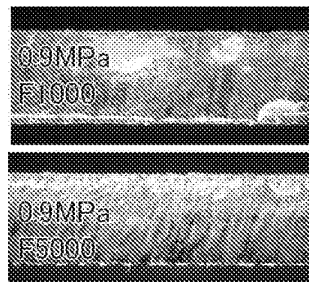
[図11]

暴露開始1ヶ月後板厚 $t=2.3\text{mm}$ 焦点位置: -0.5mm

めっき付着量			K27								
ノズル径(mm)			S2.0			D4.0			D7.0		
アnstガス圧(MPa)			0.9	0.7	0.5	0.9	0.7	0.5	0.9	0.7	0.5
板 $t=2.3$	切断速度 mm/min	1000	無×	無×	無×	無×	無○	無×	p○	p○	p×
		2000	p×	p×	p×	p×	p○	p○	p○	p○	p○
		3000	PO	PO	PO	PO	PO	PO	PO	PO	PO
		4000	PO	PO	PO	PO	PO	PO	PO	PO	PO
		5000	PO	PO	PO	PO	PO	PO	PO	PO	PO

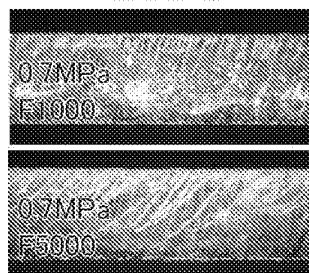
(A)

K27 S2.0



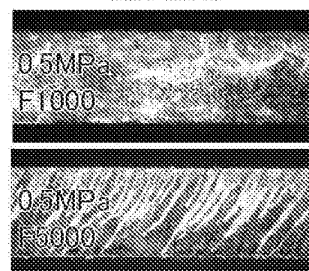
(B)

K27 D4.0



(C)

K27 D7.0



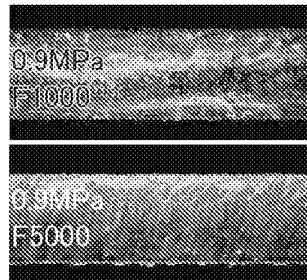
[図12]

暴露開始1ヶ月後板厚 $t=2.3\text{mm}$ 焦点位置: -0.5mm

めっき付着量			K35								
ノズル径(mm)			S2.0			D4.0			D7.0		
アnstガス圧(MPa)			0.9	0.7	0.5	0.9	0.7	0.5	0.9	0.7	0.5
板 $t=2.3$	切断 速度 mm /min	1000	無×	無×	無×	P×	p×	p×	p×	p×	p×
		2000	P×	P×	P×	P×	PO	PO	PO	PO	PO
		3000	PO	PO	PO	PO	PO	PO	PO	PO	PO
		4000	PO	PO	PO	PO	PO	PO	PO	PO	PO
		5000	PO	PO	PO	PO	PO	PO	PO	PO	PO

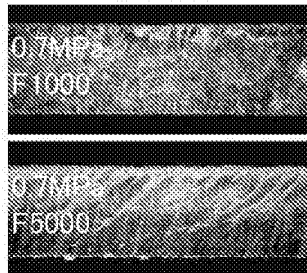
(A)

K35 S2.0



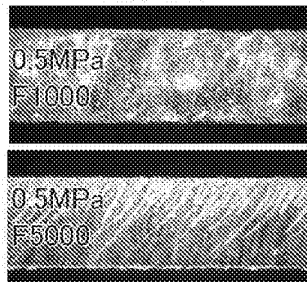
(B)

K35 D4.0



(C)

K35 D7.0

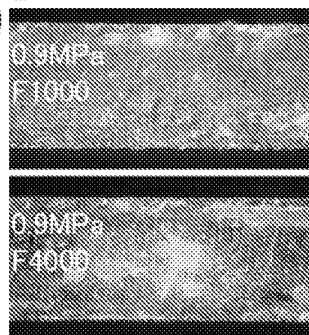


[図13]

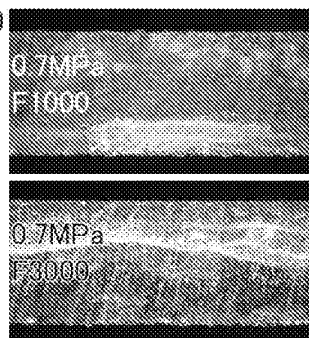
暴露開始1ヶ月後板厚 $t=3.2\text{mm}$ 焦点位置: -0.5mm

めっき付着量			K14							
ノズル径(mm)			S2.0		D4.0			D7.0		
アnstガス圧(MPa)			0.9	0.7	0.9	0.7	0.5	0.9	0.7	0.5
板 t=3.2	切断速度 mm/min	1000	無×	無×	無×	無×	無×	p×	p×	無×
		1500	無×	無×	無×	無×	無×	p×	p×	p×
		2000	無×	無×	無×	無×	無×	p×	p×	p×
		2500	無×	無×	無×	無×	無×	P×	P×	p×
		3000	無×	無×	無×	無×	p×	P×	P×	不
		3500	無×	無×	無×	不	不	不	不	不
		4000	無×	p×	不	不	不	不	不	不

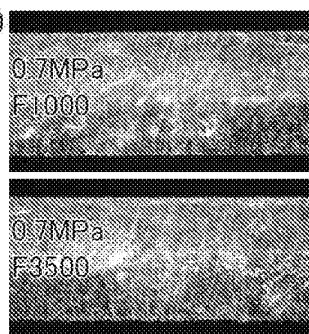
(A) K14 S2.0



(B) K14 D4.0



(C) K14 D7.0

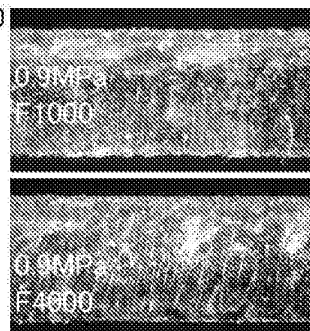


[図14]

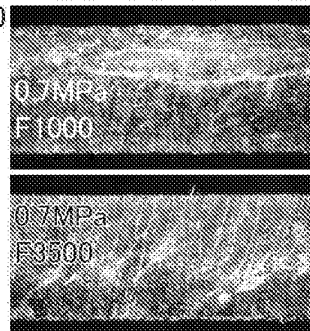
暴露開始1ヶ月後板厚 $t=3.2\text{mm}$ 焦点位置:-0.5mm

めっき付着量			K27							
ノズル径(mm)			S2.0		D4.0			D7.0		
アnstガス圧(MPa)			0.9	0.7	0.9	0.7	0.5	0.9	0.7	0.5
板 t=3.2	切断速度 mm/min	1000	無×	無×	無×	無×	無×	p×	p○	p○
		1500	無×	無×	無×	無×	無×	p×	p○	p○
		2000	無×	無×	p×	p×	p×	p○	p○	p○
		2500	p×	p×	p×	p○	p○	PO	PO	PO
		3000	p×	PO	PO	PO	PO	PO	PO	PO
		3500	PO	PO	PO	PO	PO	PO	PO	PO
		4000	PO	PO	不	不	不	不	不	不

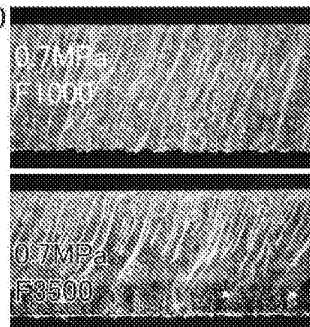
(A) K27 S2.0



(B) K27 D4.0



(C) K27 D7.0

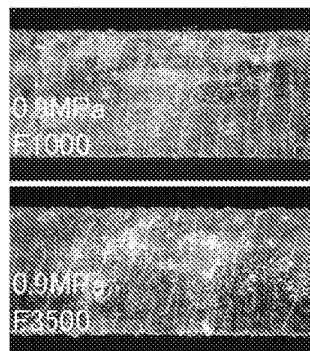


[図15]

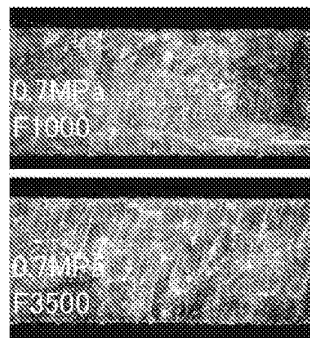
暴露開始1ヶ月後板厚 $t=3.2\text{mm}$ 焦点位置: -0.5mm

めっき付着量			K35								
ノズル径(mm)			S2.0		D4.0			D7.0			
アnstガス圧(MPa)			0.9	0.7	0.9	0.7	0.5	0.9	0.7	0.5	
板 t=3.2	切断速度 mm/min	1000	無×	無×	無×	無×	無×	p×	p○	p○	
		1500	無×	無×	無×	無×	無×	p○	p○	p×	
		2000	p×	p×	p×	p×	p×	PO	PO	PO	
		2500	P×	p×	PO	PO	PO	PO	PO	PO	
		3000	P×	PO	PO	PO	PO	PO	PO	PO	
		3500	PO	PO	PO	PO	PO	不	不	不	
		4000	不	不	不	不	不	不	不	不	

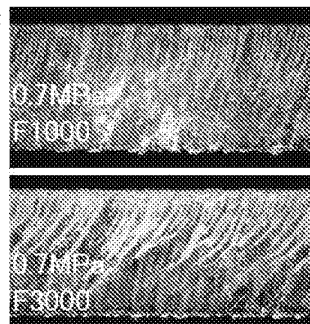
(A) K35 S2.0



(B) K35 D4.0



(C) K35 D7.0



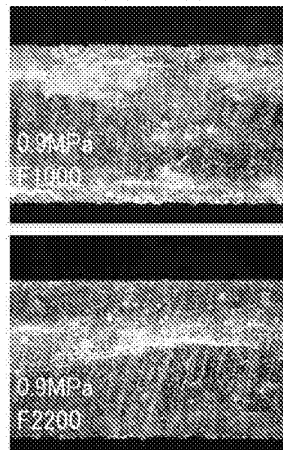
[図16]

暴露開始1ヶ月後板厚 $t=4.5\text{mm}$ 焦点位置: -0.5mm

めっき付着量			K27						K35					
ノズル径(mm)			D4.0			D7.0			D4.0			D7.0		
アnstガス圧(MPa)			0.9	0.7	0.5	0.9	0.7	0.5	0.9	0.7	0.5	0.9	0.7	0.5
板 t=4.5	切断速度 mm/min	1000	無×	無×	×	P×	P×	不×	無×	無×	不×	PO	PO	不×
		1500	無×	無×	×	PO	PO	不	p×	無×	×	PO	PO	不
		2000	p×	p×	×	PO	PO	不	p×	無×	×	PO	PO	不
		2200	p×	p×	不	不	PO	不	P×	p×	×	PO	PO	不
		2500	不	不	不	不	不	不	不	不	不	不	不	不

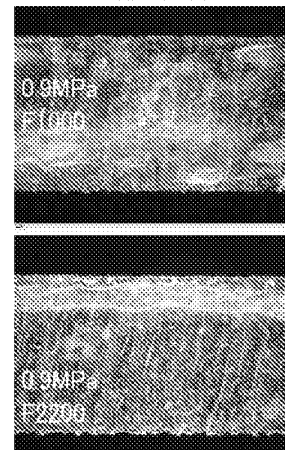
(A)

K27 D4.0



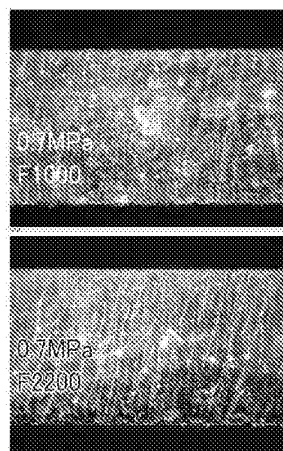
(C)

K35 D4.0



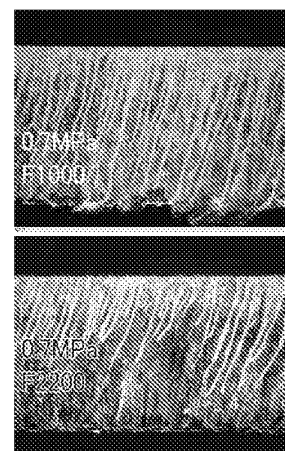
(B)

K27 D7.0



(D)

K35 D7.0



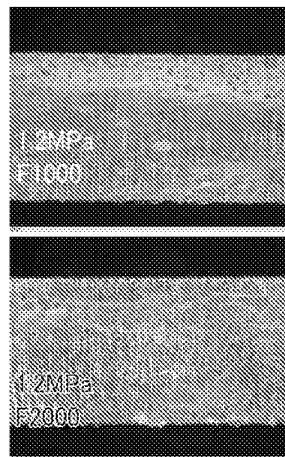
[図17]

暴露開始1ヶ月後板厚 $t=6.0\text{mm}$ 焦点位置:-2.0mm

めっき付着量			K27					K35				
ノズル径(mm)			D4.0			D7.0		D4.0			D7.0	
アnstガス圧(MPa)			1.2	0.9	0.7	1.2	0.9	1.2	0.9	0.7	1.2	0.9
板 $t=6.0$	切 断 速 度 mm /min	1000	無×	無×	ド×	○P×	ド×	無×	無×	ド×	○P×	ド○
		1500	無×	無×	ド×	○P×	ド×	P×	無×	ド×	○PO	ド○
		1800	不	無×	不	不	不	○P×	無×	×	不	不
		2000	無×	不	不	不	不	不	不	不	不	不

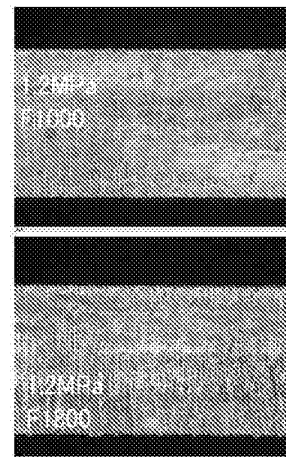
(A)

K27 D4.0



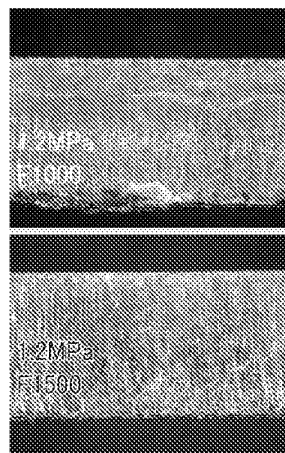
(C)

K35 D4.0



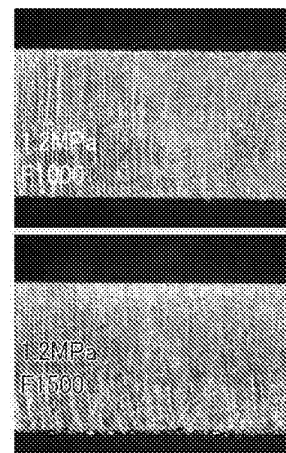
(B)

K27 D7.0



(D)

K35 D7.0

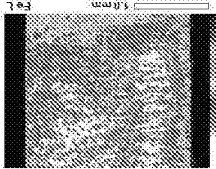
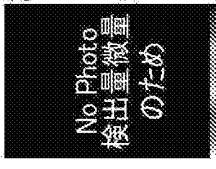
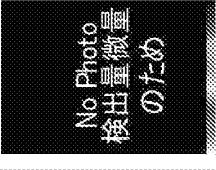
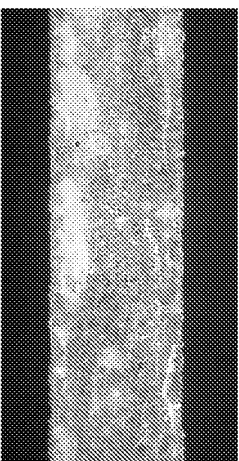
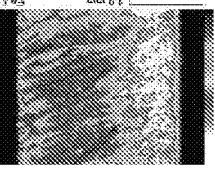
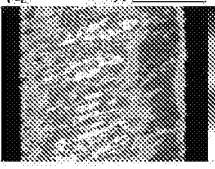
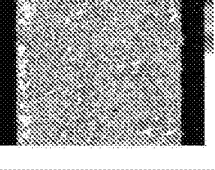
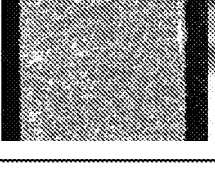
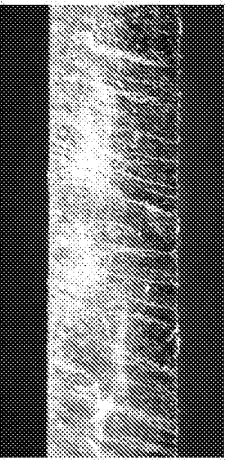


[図18]

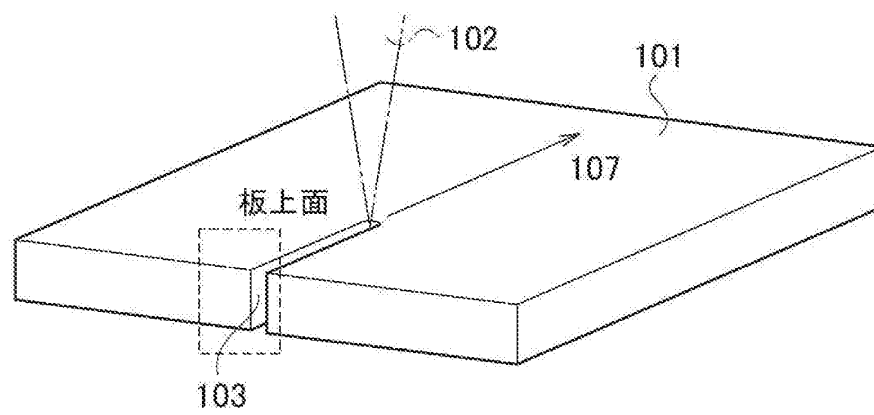
板厚 $t=2.3\text{mm}$

加工速度	アシストガス : N_2			アシストガス : N_2+O_2		
	K35、D7.0、 0.5MPa	K27、D4.0 0.7MPa	K14、D4.0、 0.7MPa	K35、D7.0、 0.5MPa	K27、D4.0 0.7MPa	K14、D4.0、 0.7MPa
F1000	p○	○	×	PO	PO	p×
F2000	PO	p×	×	PO	PO	p×
F3000	PO	PO	PO	PO	PO	PO
F4000	PO	PO	PO	PO	PO	PO
F5000	PO	PO	PO	PO	PO	PO

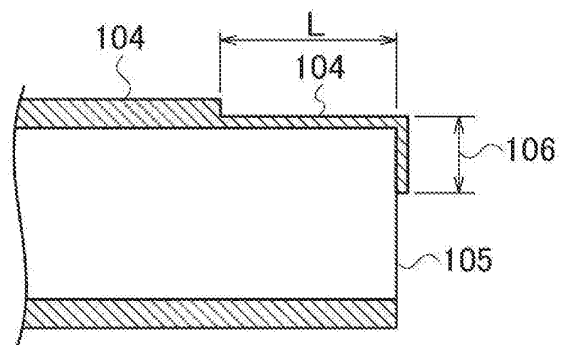
[図19]

加工電圧 : 3kV t=2.3 K14					
加工速度	Fe	Zn	Al	Mg	暴露試験結果(4週間後)
2200 (mm/min)	 重量% : 89.16	 重量% : 1.45	 重量% : 0.54	 重量% : 0.36	
	 重量% : 32.48	 重量% : 43.57	 重量% : 4.02	 重量% : 2.19	
5000 (mm/min)					

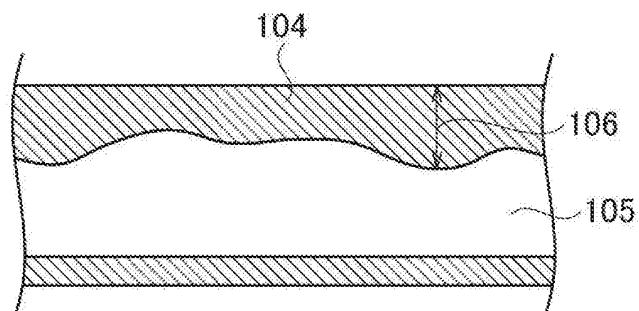
[図20]



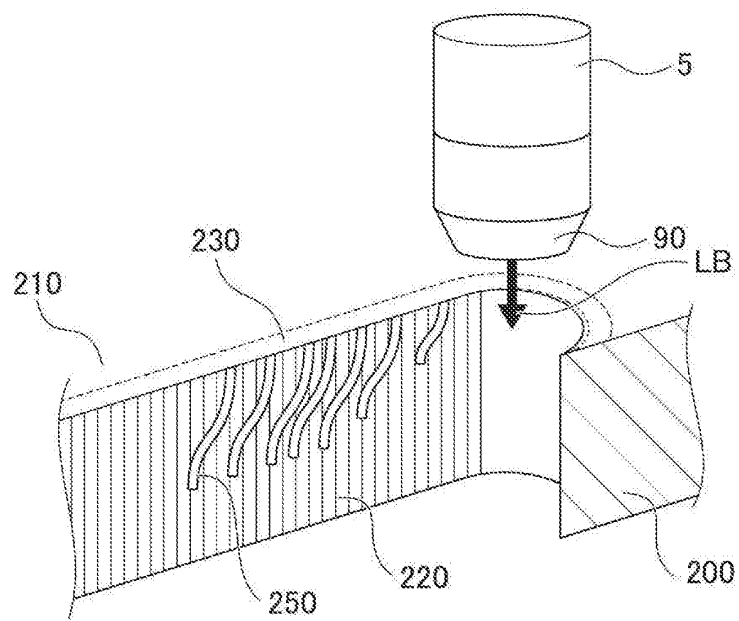
[図21]



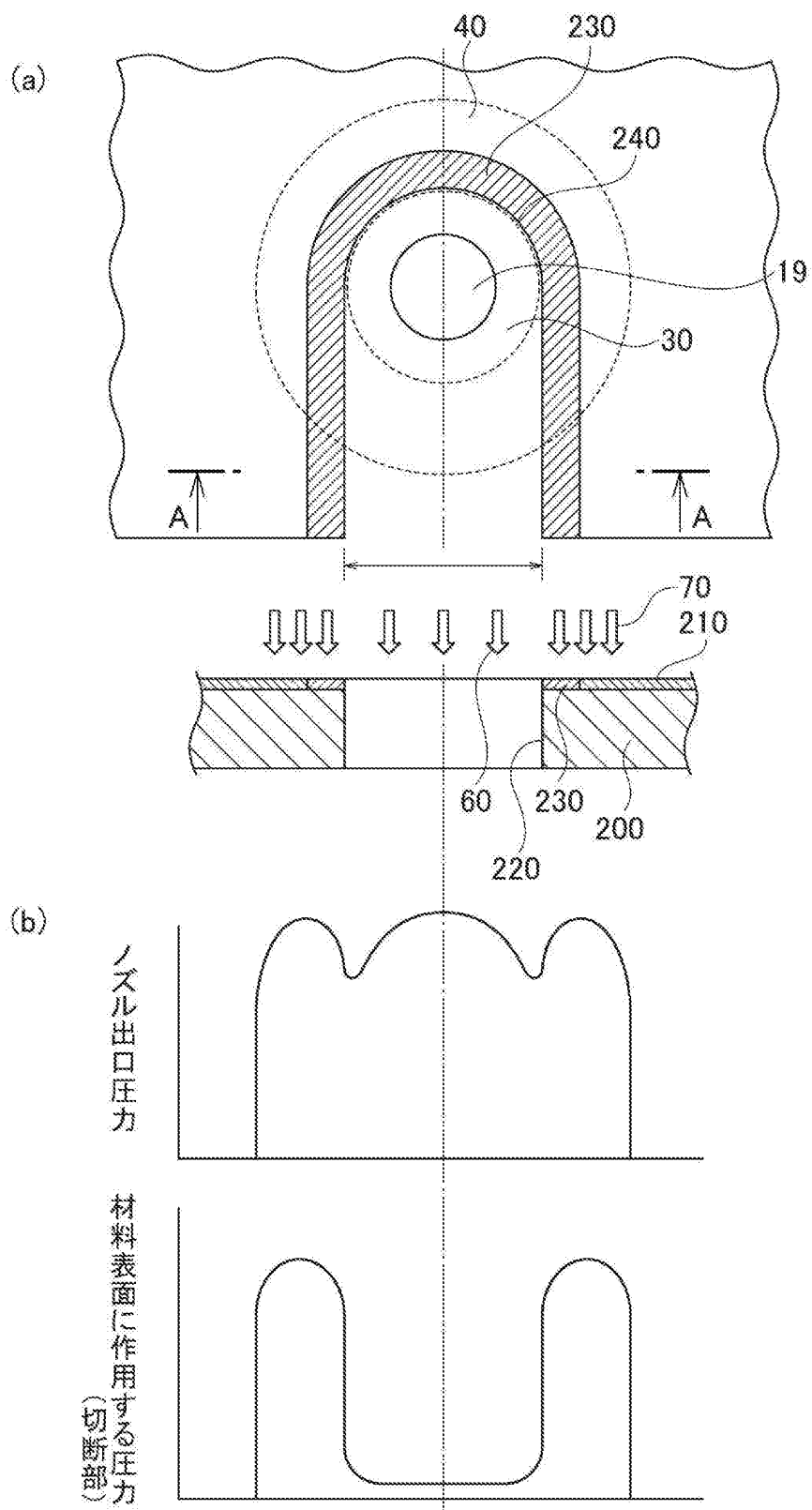
[図22]



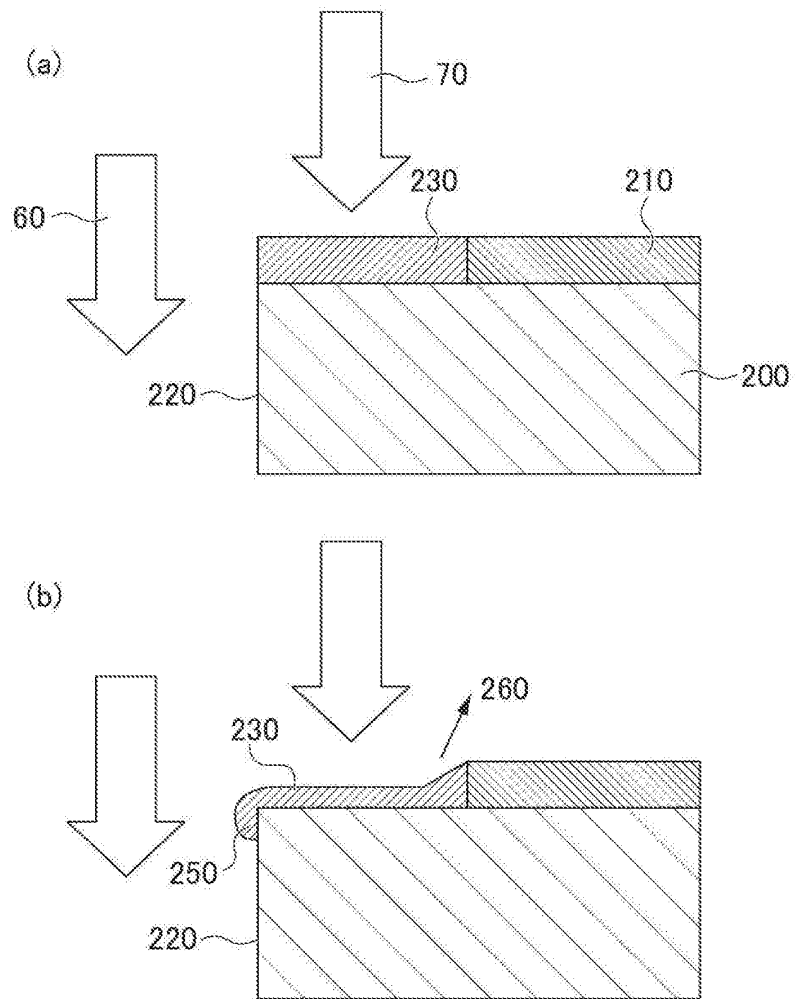
[図23]



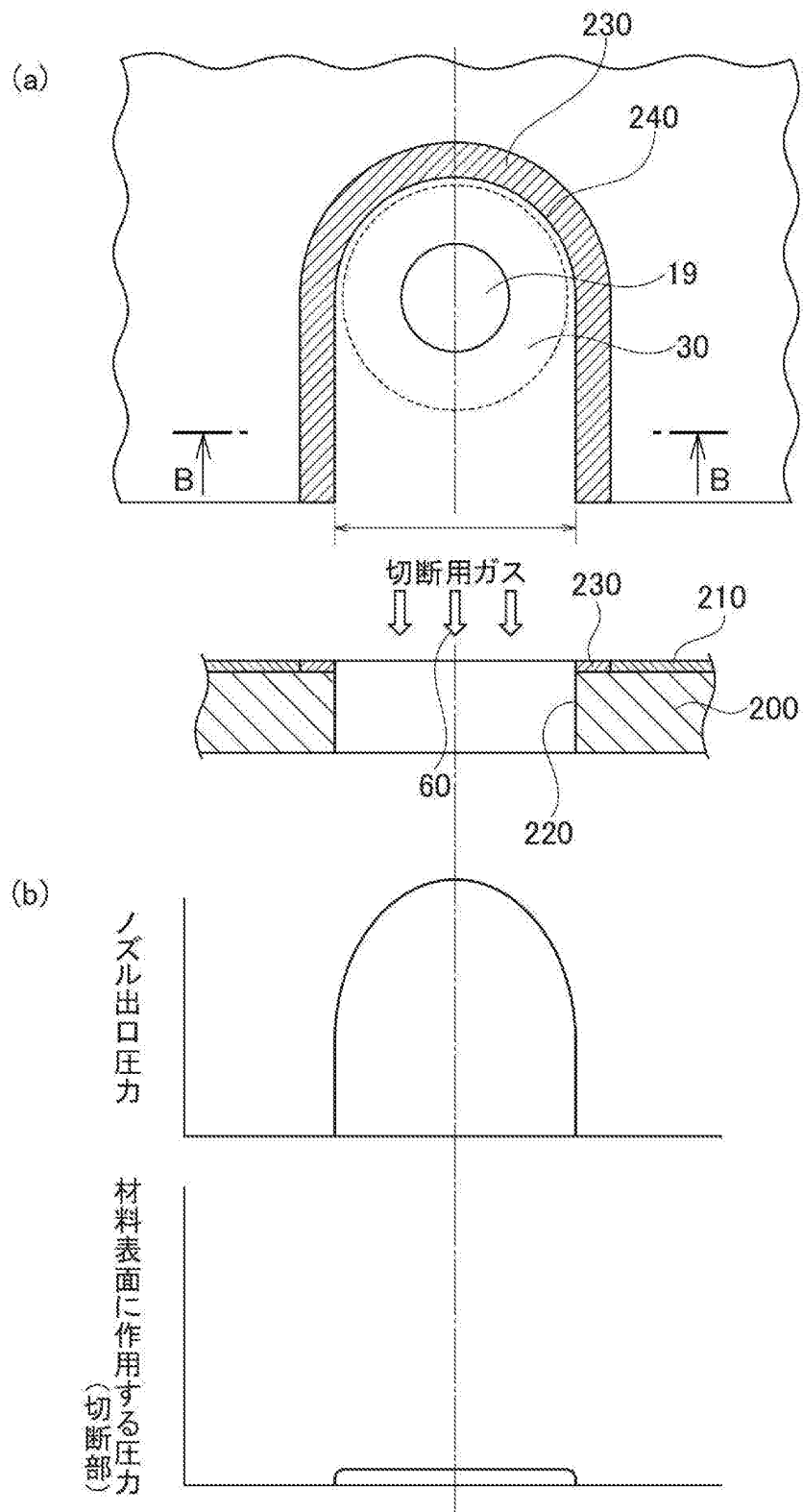
[図24]



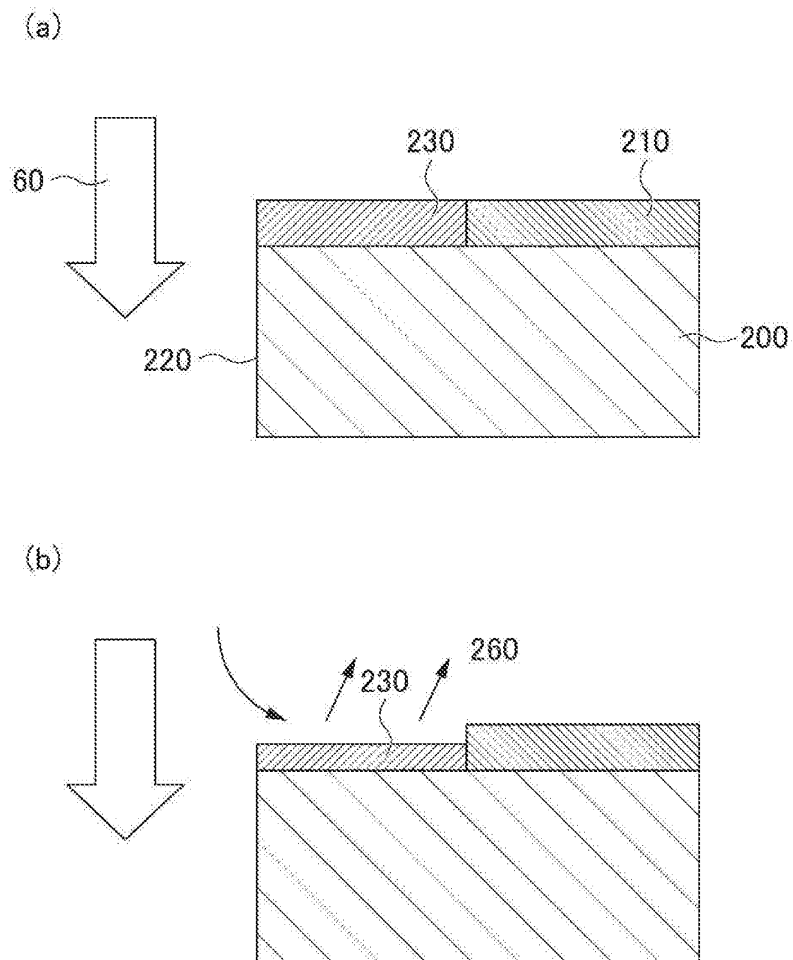
[図25]



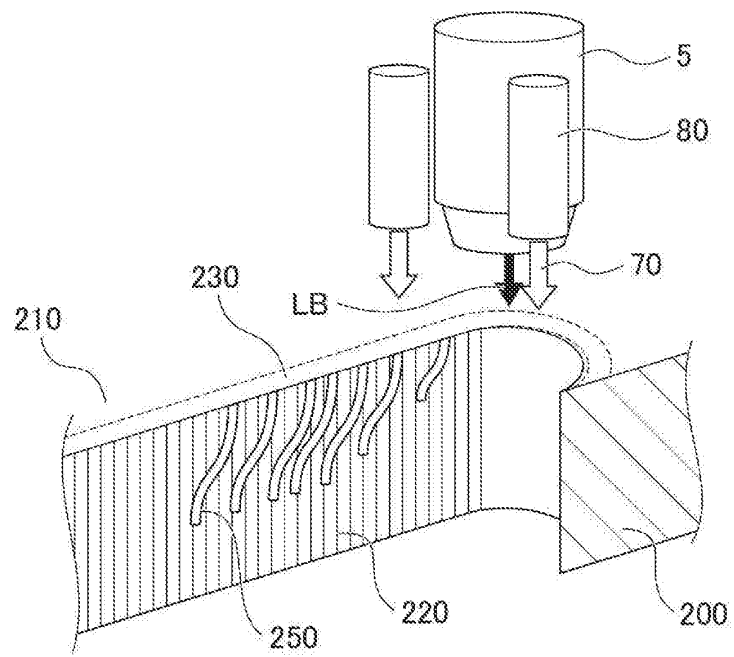
[図26]



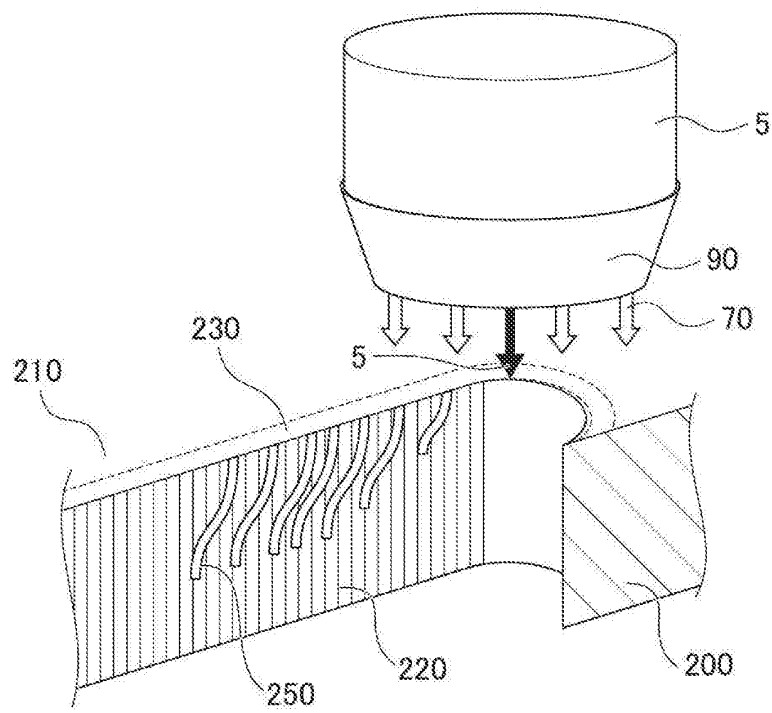
[図27]



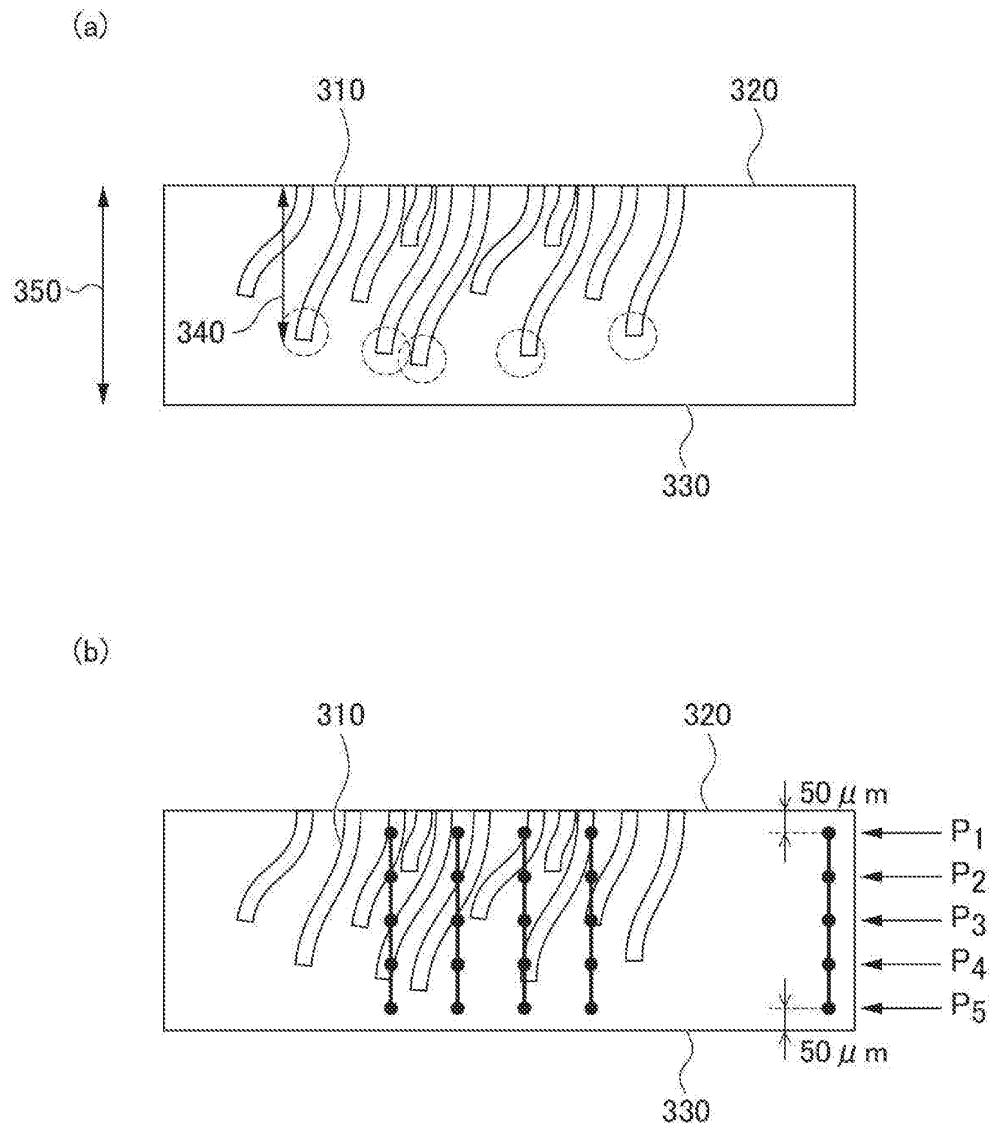
[図28]



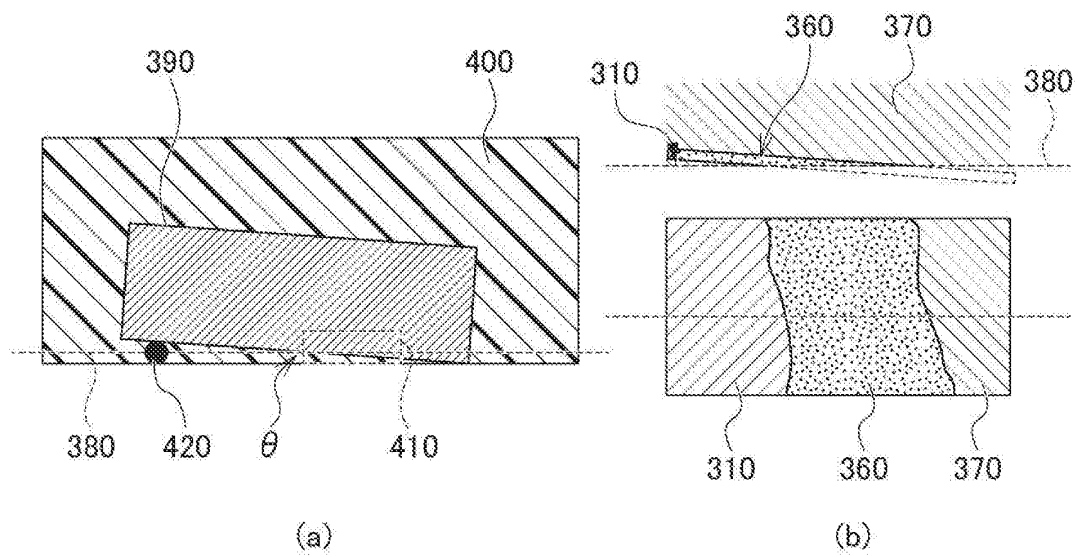
[図29]



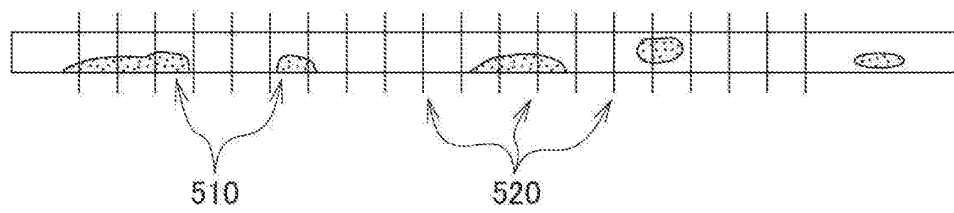
[図30]



[図31]



[図32]



[図33]

