

**Manufacturing
Center
Service Rates**

PROPOSED SERVICE RATE FOR CMR

Table 1. TTU CMR equipment usage rates (revised on 4-30-2019)

Equipment	Fed or Non-Fed Equipment	Item	Cost (\$)	TTU Hourly cost (\$) (with staff assistance)	UTK Hourly cost (\$) (Rates are on self-use base. Operation by staff will incur an additional charge for staff assistance.)	MTSU Hourly cost (\$) (with staff assistance)
SEM	Fed	Operator hourly rate (salary + benefits)	\$48.35	\$48.35		
		Service contract (per year)	\$23,000.00	\$46.00		
		Consumables		\$1.20		
		Depreciation				
		Total		\$95.55		
		Indirect cost (42%)		\$40.13		
		Total cost			\$135.68	\$90-\$135
CMR New Rate			\$137.00			
XRD	Fed	Operator hourly rate (salary + benefits)	\$52.21	\$52.21		
		Safety inspection	\$70.00	\$0.14		
		Dosimeter	\$1,400.00	\$2.80		
		Consumables		\$1.00		
		Depreciation				
		Total		\$56.15		
		Indirect cost (42%)		\$23.58		
Total cost			\$79.73	N/A	N/A	
CMR New Rate			\$81.00			
Specimen prep (mounting & polishing) Assume 1 sample is prepared per hour (mounting + polishing)	Non-fed	Operator hourly rate (salary + benefits)	\$48.35	\$48.35		
		Consumables		\$29.00		
		Depreciation		\$0.36		
		Total		\$77.71		
		Indirect cost (42%)		\$32.64		
		Total cost			\$110.34	\$24
CMR New Rate			\$112.00			
Optical microscope	Non-fed	Operator hourly rate (salary + benefits)	\$48.35	\$48.35		
		Consumables		\$0.00		
		Depreciation		\$0.23		
		Total		\$48.58		
		Indirect cost (42%)		\$20.40		
		Total cost			\$68.98	N/A
CMR New Rate			\$70.00			
Microhardness	Non-fed	Operator hourly rate (salary + benefits)	\$48.35	\$48.35		
		Consumables		\$0.00		
		Depreciation		\$0.43		
		Total		\$48.78		
		Indirect cost (42%)		\$20.49		
		Total cost			\$69.27	N/A
CMR New Rate			\$71.00			
Sputter Coater	Non-fed	Operator hourly rate (salary + benefits)	\$48.35	\$48.35		
		Consumables		\$5.00		
		Depreciation		\$0.43		
		Total		\$53.78		
		Indirect cost (42%)		\$22.59		
		Total cost			\$76.37	N/A
CMR New Rate			\$78.00			
Zygo Optical Profilometer	Non-fed	Operator hourly rate (salary + benefits)	\$48.35	\$48.35		
		Consumables		\$1.00		
		Depreciation		\$1.52		
		Total		\$50.87		
		Indirect cost (42%)		\$21.36		
		Total cost			\$72.23	N/A
CMR New Rate			\$74.00			

Table 2. Estimate of depreciation rate for non-fed equipment
 Depreciation = (New equipment cost-Salvage value of the equipment)/Lifespan

		New equipment cost (\$)	Salvage value (\$)	Lifespan (yr)	Depreciation (\$/hr)
Specimen pre	Saw	\$9,165.00	\$200.00	10	\$0.10
	Mounting	\$10,419.00	\$300.00	10	\$0.12
	Grinder/polisher	\$12,569.31	\$350.00	10	\$0.14
	Total				\$0.36
Optical microscope	Microscope	\$20,000.00	\$200.00	10	\$0.23
	Software	\$5,000.00			
	Total				\$0.23
Microhardness	Tester	\$38,000.00	\$200.00	10	\$0.43
	Total				\$0.43
Sputter coater	Coater	\$38,000.00	\$200.00	10	\$0.43
	Total				\$0.43
Zygo Optical Profilometer	Profilometer	\$200,000.00	\$700.00	15	\$1.52
	Total				\$1.52

Cost of consumables (Updated by Wayne Hawkins, 3-11-2019)

	Pack Size	Per/Mount	MOUNTS/PACK	\$/PACK	COST PER/MOUNT
Mounting Media (1.25" Sample)	1800 g	22.5 g	80	\$ 112.00	\$1.40
320 Grit	100	1	100	\$ 149.00	\$1.49
Ultra Pad	10	1	10	\$ 87.00	\$8.70
9 um MetaDi Supreme Diamond	8 oz	0.1 oz	80	\$ 127.00	\$1.59
TriDent Polishing Pad	10	1	10	\$ 94.00	\$9.40
3 um MetaDi Supreme Diamond	8 oz	0.1 oz	80	\$ 90.00	\$1.13
MicroCloth Polishing Cloth	10	1	10	\$ 57.00	\$5.70
.05 MasterPrep Alumina	32 oz	0.2 oz	160	\$ 77.00	\$0.48
					\$29.88
Cold Mounting (1.25" Sample)					
release agent	4 oz		20	\$ 32.00	\$1.60
EpoxiCure 2, Epoxy Hardener	16 oz	0.141 oz	113	\$ 67.00	\$0.59
EpoxiCure 2, Epoxy Resin	64 oz	0.564 oz	113	\$ 168.00	\$1.48
					\$3.67
SEM					
* Minimal cost, covered in SEM usage costs					
Copper tape	Roll			\$ 40.00	
Copper Nickle Tape	Roll			\$ 35.00	
Carbon Tape	Roll			\$ 30.00	
Carbon Conductive Adhesive	30 g			\$ 16.00	
Filaments	10 Box			\$ 55.00	
Carbon Tabs	100 tabs			\$ 17.00	
FEG					
* Minimal cost, covered in FEG usage costs					
Copper tape	Roll			\$ 40.00	
Copper Nickle Tape	Roll			\$ 35.00	
Carbon Tape	Roll			\$ 30.00	
Carbon Conductive Adhesive	30 g			\$ 16.00	
Carbon Tabs	100 tabs			\$ 17.00	
MicroHardness Tester					
no consumables					
labor / equipment / computer / software					
Coaters					
Carbon Coater	12 rods pkg			\$ 88.00	
Gold Coater	1 target			\$ 875.00	
labor / equipment					