

Supplementary Material

Oxidative Vaporization Etching for Molybdenum Tip Formation in Air

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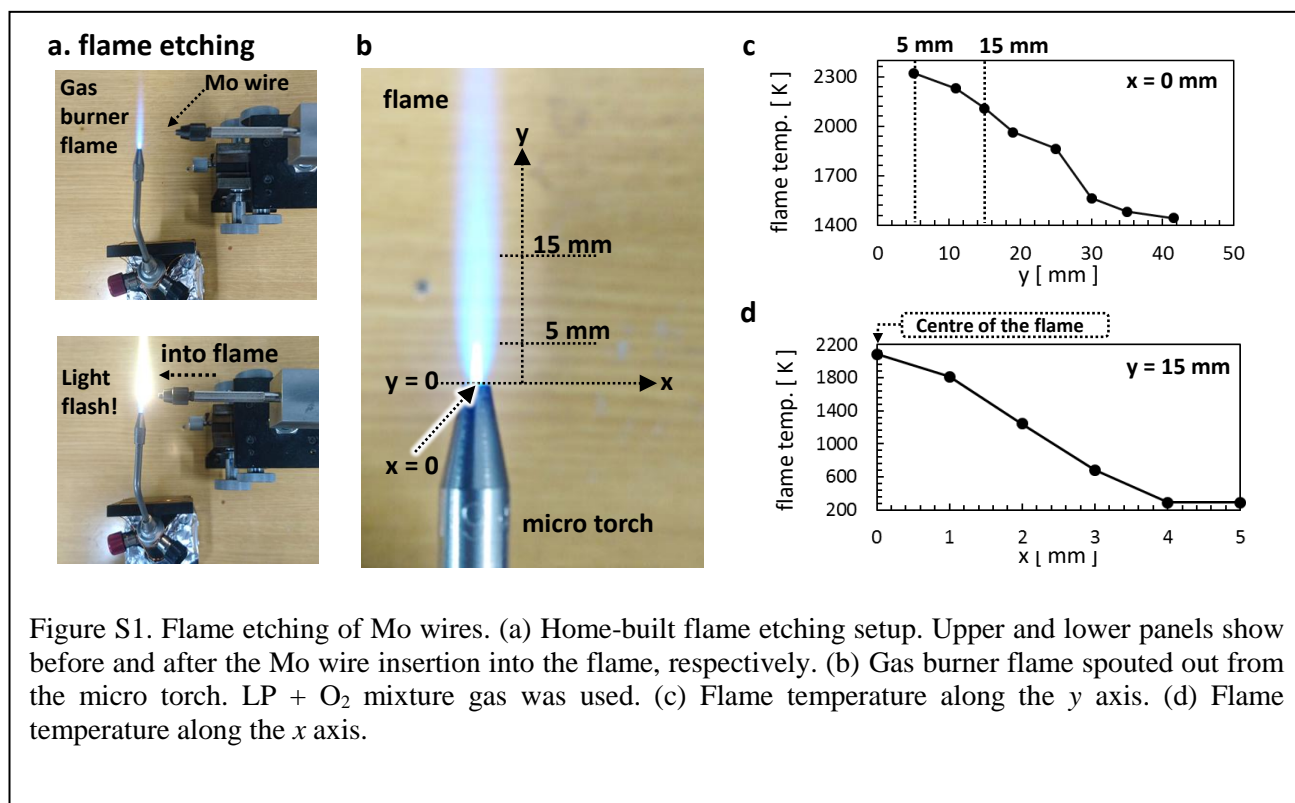
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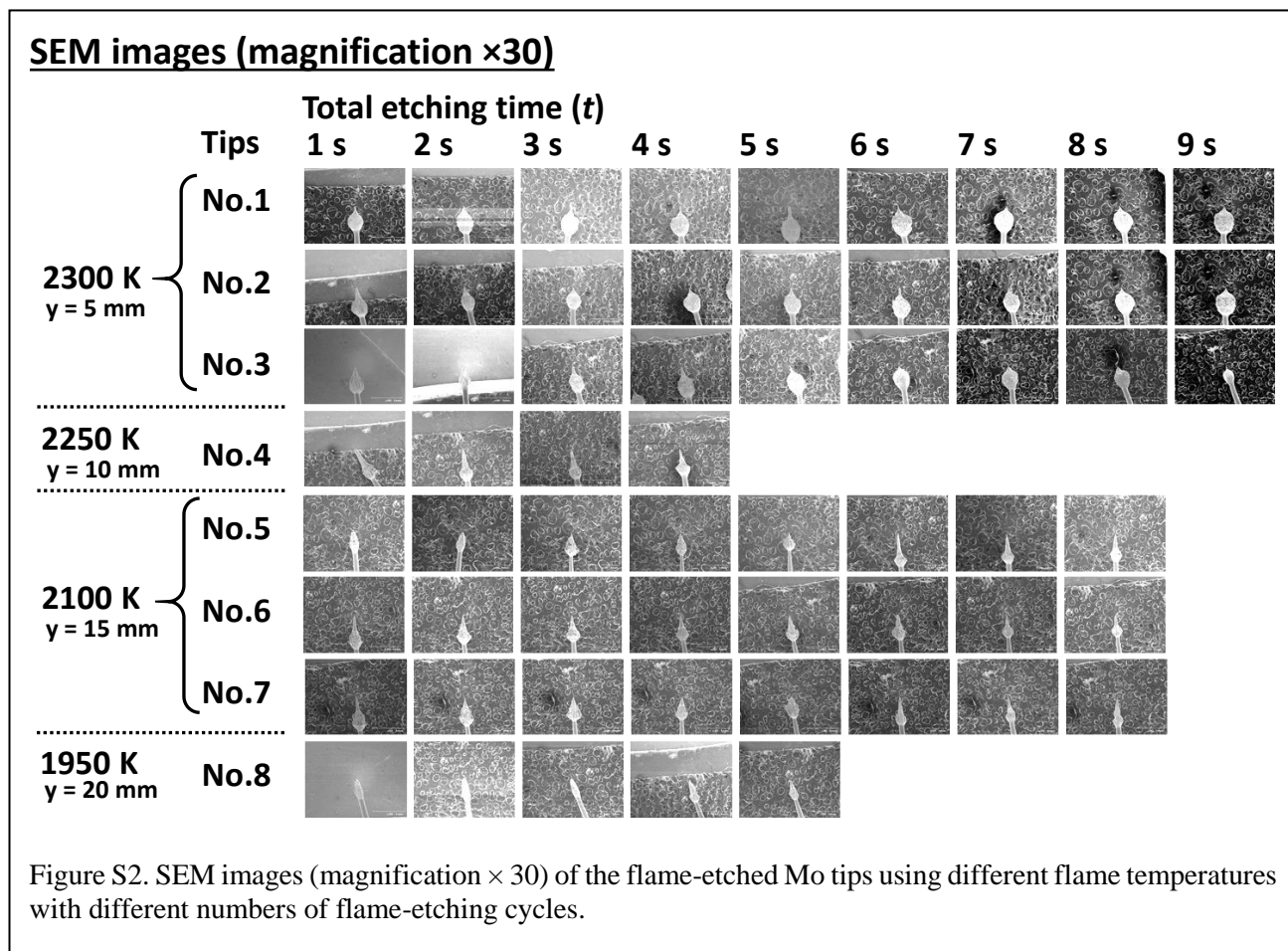
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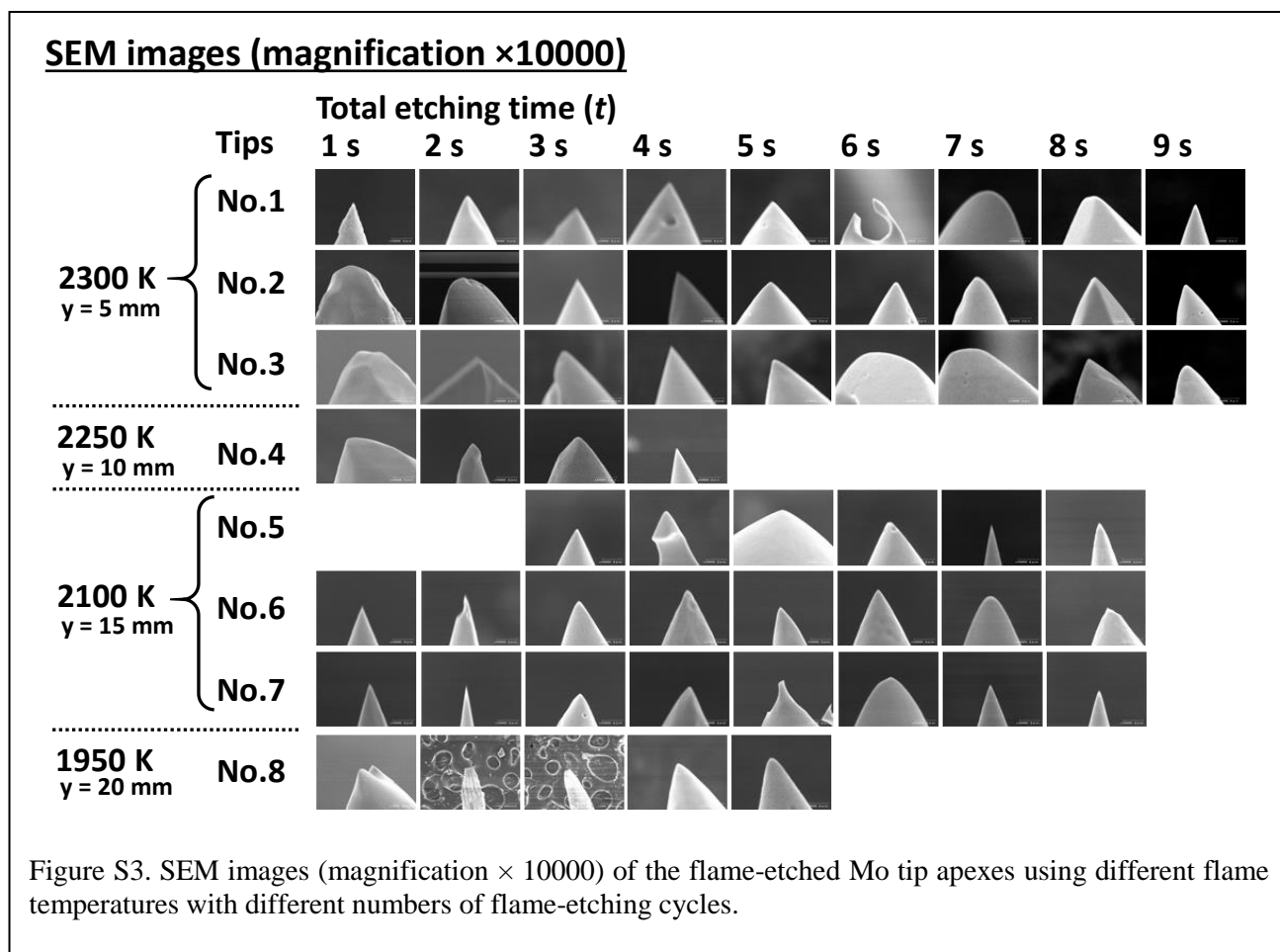
Flame etching setup.



Flame-etching cycles at different flame positions.



Flame-etching cycles at different flame positions.



X-ray diffraction Laue mapping of the flame-etched Mo tips

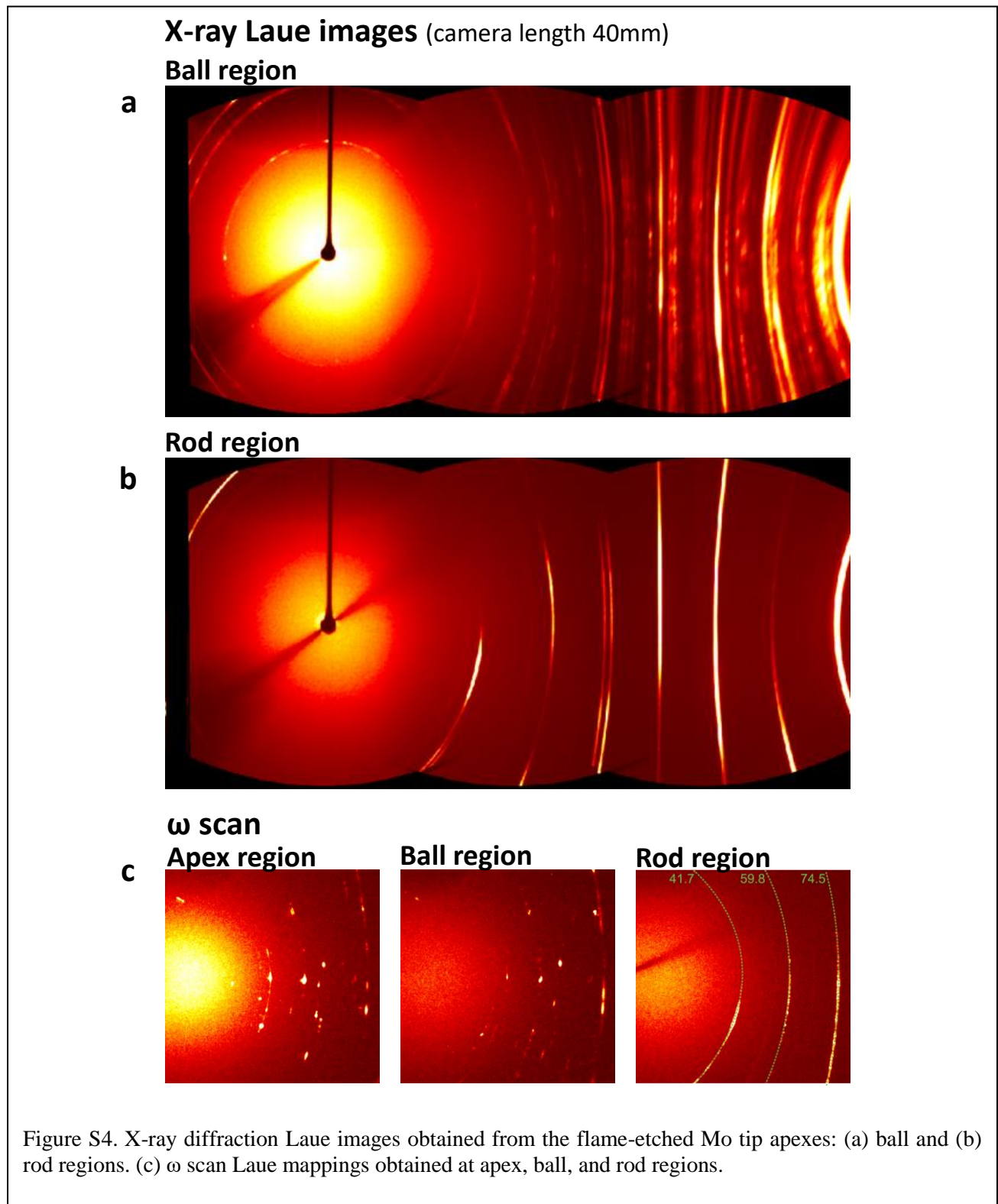


Figure S4. X-ray diffraction Laue images obtained from the flame-etched Mo tip apices: (a) ball and (b) rod regions. (c) ω scan Laue mappings obtained at apex, ball, and rod regions.

Crystalline structures and space groups of Mo and Mo-oxides.

	Mo ¹⁾	Mo ^{IV} O ₂ ²⁾	Mo ^{VI} O ₃ a ³⁾	Mo ^{VI} O ₃ b ⁴⁾	Mo ^{VI} O ₃ c ⁵⁾	Mo ^{VI} O ₃ d ⁶⁾
Bravais	Cubic	Monoclinic	Orthorhombic	Monoclinic	Monoclinic	Monoclinic
space group	<i>Im-3m</i>	<i>P2₁/c</i>	<i>Pnma</i>	<i>P2₁/c</i>	<i>P2₁/c</i>	<i>P2₁/m</i>
a (Å)	3.144	5.5405	14.02	7.1228	7.415	3.954
b (Å)	---	4.8573	3.7028	5.366	7.433	3.687
c (Å)	---	5.6265	3.9663	5.5665	10.6484	7.095
α (°)	90	90	90	90	90	90
β (°)	90	119.689	90	92.01	134.045	103.75
γ (°)	90	90	90	90	90	90
V (Å ³)	31.08	131.542	205.904	212.626	421.856	100.47

Figure S5. Crystalline structures and space groups of Mo and Mo-oxides.

References

- 1) *J. Am. Ceram. Soc.*, **75**, 1412 (1992)
- 2) *Aust. J. Chem.*, **48**, 1473 (1995)
- 3) *J. Appl. Crystallogr.*, **21**, 960 (1988)
- 4) *J. Solid State Chem.*, **93**, 193 (1991)
- 5) *Mater. Sci. Forum*, **27/28**, 85 (1988)
- 6) *J. Solid State Chem.*, **91**, 121 (1991)

Video 1

This movie (mp4 file, 4 seconds, 10 MB) shows the flame etching process of a Mo wire.

The file name: Video1_MoTip_flame_etching.mp4