

Materials List for:

Multimodal Hierarchical Imaging of Serial Sections for Finding Specific Cellular Targets within Large Volumes

Irene U. Wacker^{1,2}, Lisa Veith³, Waldemar Spomer^{2,4}, Andreas Hofmann^{2,4}, Marlene Thaler⁵, Stefan Hillmer⁶, Ulrich Gengenbach^{2,4}, Rasmus R. Schröder^{1,2,3}

¹Cryo Electron Microscopy, Centre for Advanced Materials, Universität Heidelberg

²Heidelberg Karlsruhe Research Partnership (HEiKA)

³Cryo Electron Microscopy, BioQuant, Universitätsklinikum Heidelberg

⁴Institute for Automation and Applied Computer Science, Karlsruhe Institute of Technology (KIT)

⁵Carl Zeiss Microscopy GmbH

⁶Electron Microscopy Core Facility, Universität Heidelberg

Correspondence to: Irene U. Wacker at irene.wacker@bioquant.uni-heidelberg.de

URL: <https://www.jove.com/video/57059>

DOI: [doi:10.3791/57059](https://doi.org/10.3791/57059)

Materials

Name	Company	Catalog Number	Comments
Instrumentation			
Ultramicrotome	RMC	PT-PC	Alternative: Leica UC7
Substrate holder	RMC	ASH-100	Alternative: home built
Plasma cleaner	Diener	Zepto 40kHz	Alternatives: Ted Pella Pelco or other benchtop plasma cleaner Example Parameters for Diener Zepto with 40kHz generator (0-100W); 0.5 mbar, 5 sccm (Air), 10% performance
Widefield fluorescence light microscope	Zeiss	Axio Observer.Z1	Alternatives: Leica, Nikon, Olympus
Fluorescence filter set	Zeiss	43 HE (Cy3/DsRed)	
Objective lens	Zeiss	Zeiss Neofluar 40x	0.75 NA
Decent workstation able to handle GB-sized image data			
FESEM	Zeiss	Ultra 55	Alternatives: FEI, Jeol, Hitachi, TESCAN
Name			
Company			
Catalog Number			
Comments			
Sectioning			
Razor blades	Plano	T585-V	
Diamond knife for trimming 45°	Diatome	DTB45	
Diamond knife for trimming 90°	Diatome	DTB90	
Jumbo diamond knife for sectioning	Diatome	DUJ3530	
Silicon wafer (pieces)	Si-Mat	Custom Made	Doping: P/Bor, orientation: <100>, thickness: 525 ± 25 µm, resistivity: 1-30 Ω-cm http://si-mat.com/silicon-wafers.html
ITO-coated coverslips	Balzers	Type Z	22 × 22 × 0.17 mm https://www.opticsbalzers.com/de/produkte/deckglas-fenster/corrslide.html
Aluminium carrier	Custom Made		76 × 26 mm

Wafer forceps	Ideal-tek	34A.SA	
Stubs forceps	Dumont	0103-2E1/2-PO-1	Dumoxel-H 2E 1/2
Diamond scriber	Plano	T5448	
Eyeshash/very soft cat's hair	Selfmade		Alternative: Plano
Brush	Selfmade		
Pattex contact adhesive	Pattex	PCL3C	Kraftkleber Classic (the yellowish one)
Fixogum	Marabu	290110001	for fixing substrate to carrier
Adhesive tape	3M	851	for fixing substrate to carrier
Isopropanol	Bernd Kraft	07029.4000	
Xylene	Carl Roth	4436	thinner for glue mixture
Rotihistol	Carl Roth	6640	alternative, limonene based thinner
Name	Company	Catalog Number	Comments
Software			
Image processing	Open source	Fiji (http://fiji.sc/#download)	
Image acquisition	Zeiss	Atlas 5 AT (module for Zeiss SEM)	Alternative for automated image acquisition: WaferMapper: https://software.rc.fas.harvard.edu/lichtman/LGN/WaferMapper.html
Name	Company	Catalog Number	Comments
Staining			
Propidiumiodide	Sigma-Aldrich	P4170	Stock solution: 1.5 mM in 0.1 % sodium azide
Uranylacetate	Science Services	E22400	
Lead(II) Nitrate	Merck	107398	
Tri Sodium Citrate Dihydrate	Merck	106448	
NaOH pellets	Merck	106469	
1M NaOH solution	Bernd Kraft	01030.3000	
Glass petri dish	Duran	23 755 56	
Name	Company	Catalog Number	Comments
Mounting			
Stubs	Plano	G301F	
Carbon pads	Plano	G3347	
Copper tape	Plano	G3397	double-sided adhesive, conductive
Silver paint	Plano	G3692	Acheson Elektrodag 1415M
Name	Company	Catalog Number	Comments
Solutions/mixtures			
Adhesive mixture for coating blocks			Pattex contact adhesive /xylene as thinner, ratio 1:3. (Alternative for xylene: Rotihistol)
Reynolds lead citrate			50 mL: Dissolve 1.33 g of lead(II) nitrate in 10 mL of dH ₂ O. Dissolve 1.76 g of tri-sodium citrate dihydrate in 10 ml dH ₂ O. Mix both and add 1 M sodium hydroxide until the solution is clear. Fill up with dH ₂ O to 50 mL.
Propidium iodide staining solution			Prepare 1:1500 dilution from stock in dH ₂ O. Vortex for adequate mixing.

Aqueous uranyl acetate			Dissolve 3 % uranyl acetate in dH ₂ O (mix thoroughly).
------------------------	--	--	--