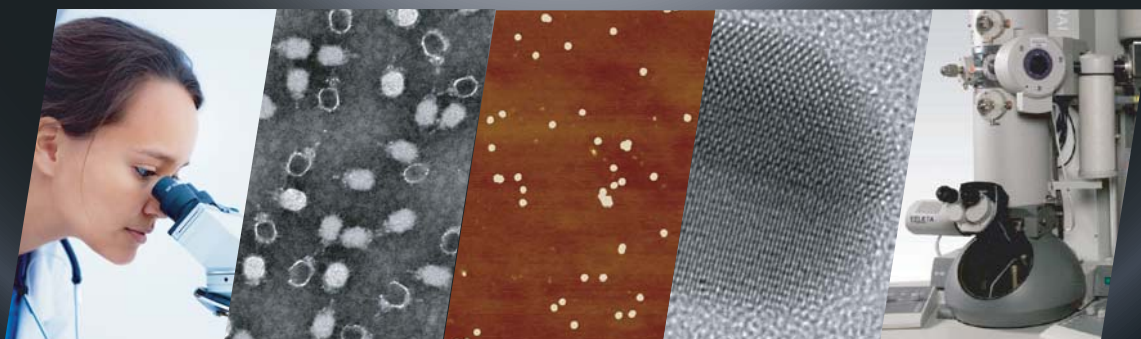
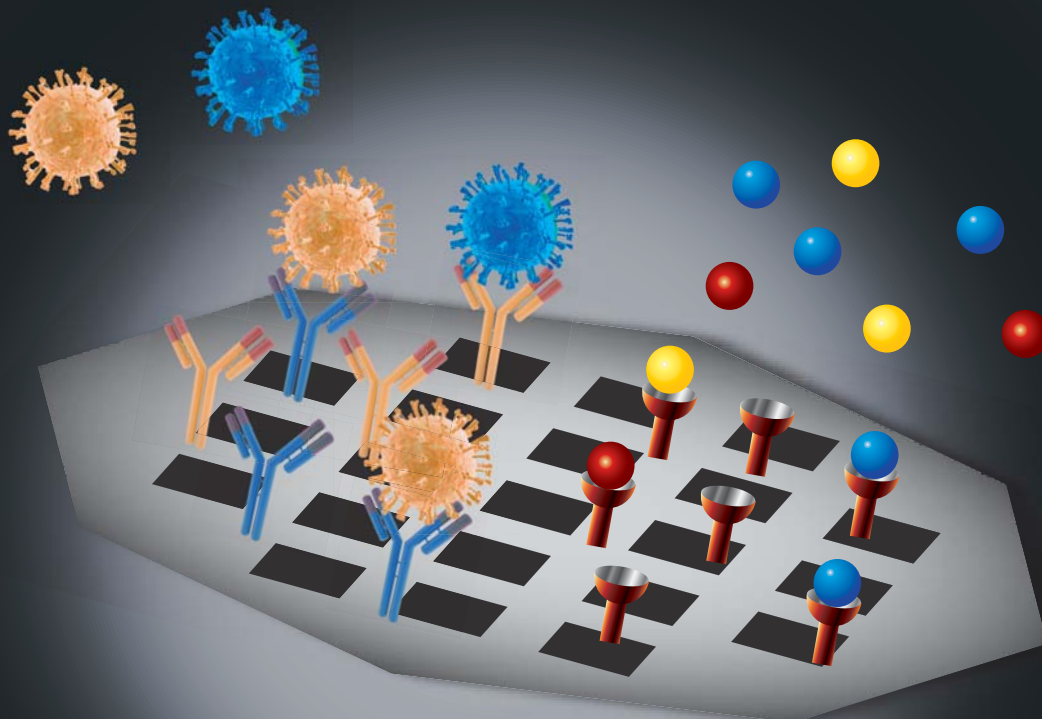




# SMART GRIDS™

Functionalized grids for advanced imaging



Dune Sciences  
1900 Millrace Drive  
Eugene, OR 97403  
Ph: (541) 359-4710  
[www.dunesciences.com](http://www.dunesciences.com)



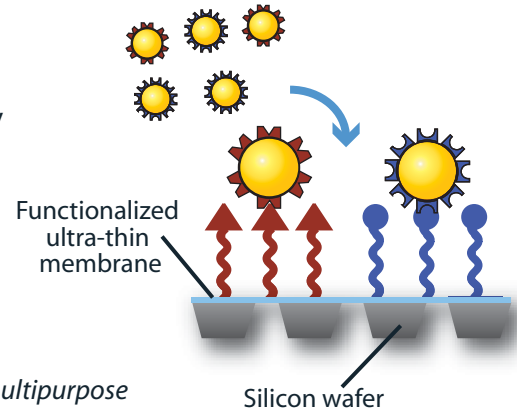
# SMART GRIDS ...functionalized grids for advanced imaging

## SMART Grids™ enable reproducible and accurate imaging and metrology.

SMART Grids<sup>†</sup> simplify sample preparation for nanoscale imaging because biological and nano- materials are attracted to and self-assemble on the grid surface via an active interface. Choose from a wide selection of hydrophilic, hydrophobic, or other active surface SMART Grids for all your EM needs.

## NanoGrids™

- Standardize sample preparation for slurries, solutions, suspensions, dry powders, coatings and thin films of any nanomaterial.
- Eliminate artifacts from sample preparation such as agglomeration and drying effects.
- Enable multistep processing and sequential imaging of the same sample due to unmatched physical, chemical, and thermal stability .



**B** NanoBasic

*Hydrophilic, non-functionalized substrates for multipurpose general analysis.*

**+** NanoPlus

*Hydrophilic, positively charged substrates with affinity for negatively charged materials such as carbon black or citrate-stabilized NPs.*

**-** NanoMinus

*Hydrophilic, negatively charged substrates with affinity for positively charged materials such as amine-functionalized nanoparticles.*

**H** Hydrophobic

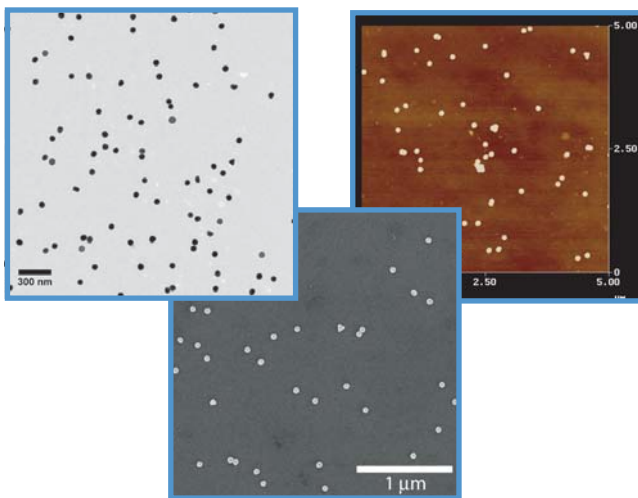
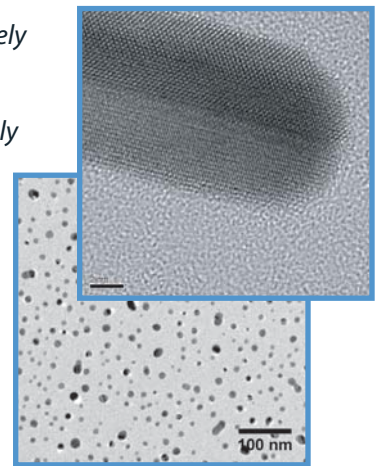
*Hydrophobic substrates for dispersion of hydrophobic materials from non-aqueous solutions.*

**N** NanoNeutral

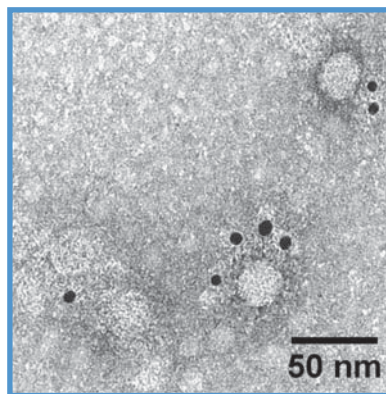
*Non-charged, hydrophilic substrates to promote hydrogen bonding to polyol-stabilized nanomaterials.*

**F** Functionalized

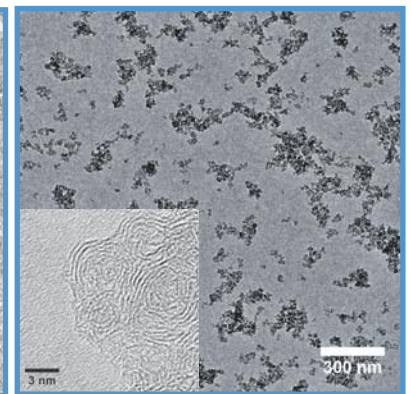
*SMART Grids with specific surface chemistries include: amine, carboxyl, sulfhydryl, alkane, alkene, and epoxy.*



Correlative analysis using bright field TEM, SEM, and AFM of 60 nm NIST Standard Reference Materials Gold Nanoparticles



TEM image of on-grid immunolabeling of adenoassociated virus (AAV2) captured on SMART Grid



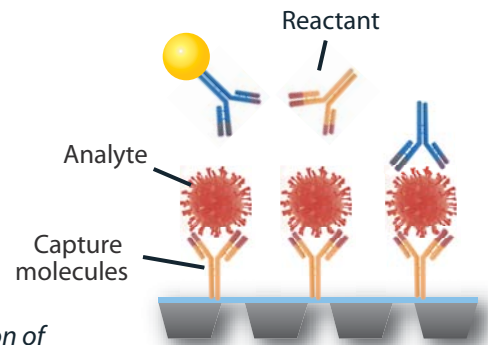
High and low resolution TEM images of carbon black on SMART SiN Grid



# SMART GRIDS ...functionalized grids for advanced imaging

## BioGrids™

- Promote affinity for proteins, viruses, or other biomolecules through both non-specific and specific binding. Purify samples directly on grid.
- Provide hydrophilic surface for excellent wettability.
- Bridge the gap between optical and electron microscopy.
- Support both positive/negative staining and cryoEM.



**BioPlus**

*Positively charged substrates for non-specific adsorption of proteins, viruses, and other biomolecules or soft materials with negatively charged surface species.*



**BioMinus**

*Negatively charged substrates for non-specific adsorption of biomolecules or soft materials with positively charged surface species.*



**BioPEG**

*Polyethyleneglycol (PEG) modified substrates for minimizing non-specific adsorption of proteins and other charged species.*



**BioLysine**

*Substrates for the covalent attachment of lysine residues or other primary amines on biomolecules. Results in random orientation based on available amine groups.*



**Protein A**

*Protein A-modified substrates for the capture of IgG antibodies. Used for on-grid purification and immunocapture of viruses and other species.*



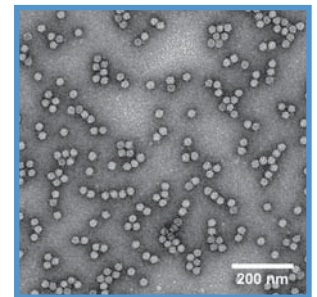
**Streptavidin**

*Streptavidin-modified substrates for the capture and on-grid purification of biotin labeled molecules.*



**LinkedON KITS**

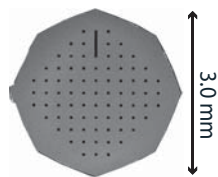
*Kits for the covalent attachment of biomolecules or other materials with amine, carboxyl, or sulfhydryl surface groups.*



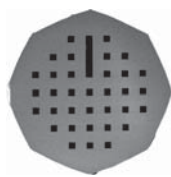
## Grid Design

SMART Grids are designed to provide users with the highest standards in quality and performance for reproducible nanoscale characterization. The ultra-thin membrane windows are electron transparent for high resolution imaging using TEM or STEM. In addition, SMART Grids provide an excellent substrate for direct correlative analysis using a variety of other analytical methods including: SEM, AFM, EPMA, XPS, and TOF-SIMS. Since the membrane windows are optically transparent, one can also integrate methods such as fluorescence microscopy and IR/Raman spectroscopy.

Both NanoGrids and BioGrids are available in standard configurations as well as custom geometries to meet all of your characterization needs. Our standard grids are 3 mm x 100 µm thick and have 25 nm thick SiO<sub>2</sub> membrane windows. Grids with no membranes (frames only) and with 75 nm membranes are also available. The SiO<sub>2</sub> membrane SMART Grids grids fit will fit in any standard TEM holder. Our new 3.8 mm square SiN Grids (5 nm membranes) offer unmatched resolution for low contrast materials.



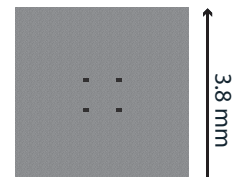
Type A: SiO<sub>2</sub> membranes  
78 - 50 x 50 µm windows



Type B: SiO<sub>2</sub> membranes  
34 - 100 x 100 µm windows



Type C: SiO<sub>2</sub> membranes  
9 - 50 µm x 1-2 mm windows



Type N: 5 nm SiN membrane  
4 - 60 x 100 µm windows

In addition to our standard grids, Dune Sciences offers a range of custom services from custom surface chemistry to custom grid geometry with rapid turnaround. Contact us today to discuss your specific needs.

To Order, Phone: 541-359-4710 Fax: 541-550-1613 or visit our website: [www.dunesciences.com](http://www.dunesciences.com)



# SMART GRIDS...functionalized grids for advanced imaging

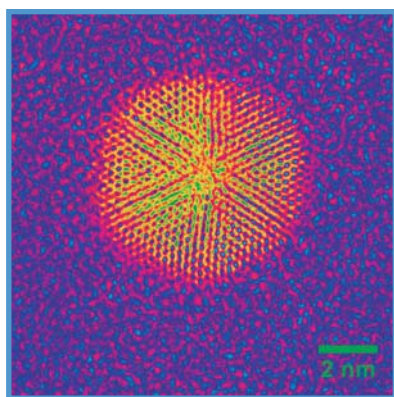
## PRODUCT LISTING

Product	Name	Description	Membrane Type <sup>s</sup>	Unit
<b>NanoGrids</b>				
NG01-011	NanoBasic*	Non-functionalized grids	SiO <sub>2</sub> , SiN	10/pk
NG01-051	NanoPlus*	Positively charged grids	SiO <sub>2</sub> , SiN	10/pk
NG01-071	NanoMinus*	Negatively charged grids	SiO <sub>2</sub> , SiN	10/pk
SG01-021	NanoNeutral*	Hydrogen bonding grids	SiO <sub>2</sub>	10/pk
SG01-101	Hydrophobic	Hydrophobic grids	SiO <sub>2</sub> , SiN	10/pk
NG01-211	NanoOxide – Al <sub>2</sub> O <sub>3</sub>	10 nm Al <sub>2</sub> O <sub>3</sub> coated grids	SiO <sub>2</sub>	10/pk
NG01-212	NanoOxide – ZnO*	10 nm ZnO-coated grids	SiO <sub>2</sub>	10/pk
<b>BioGrids</b>				
BG01-051	BioPlus*	Positively charged BioGrids	SiO <sub>2</sub> , SiN	10/pk
BG01-071	BioMinus*	Negatively charged BioGrids	SiO <sub>2</sub> , SiN	10/pk
BG01-021	BioPEG*	PEG-modified BioGrids	SiO <sub>2</sub> , SiN	10/pk
BG01-041	BioLysine*	Covalent binding to lysine	SiO <sub>2</sub>	10/pk
BG01-081	Protein A*	Protein A modified BioGrids	SiO <sub>2</sub>	10/pk
BG01-091	Streptavidin*	Streptavidin modified BioGrids	SiO <sub>2</sub>	10/pk
<b>Kits</b>				
SSG-NP	Varigold	Prepared Grids with assorted Au NPs.	SiO <sub>2</sub>	Kit/2 grids
SGG-NP60	SG Gold 60	Prepared Grids- 60 nm Au NIST SRM8013	SiO <sub>2</sub>	Kit/2 grids
SGG-NP30	SG Gold 30	Prepared Grids- 30 nm Au NIST SRM Au NPs	SiO <sub>2</sub>	Kit/2 grids
SGG-NP10	SG Gold 10	Prepared Grids- 10 nm Au NIST SRM	SiO <sub>2</sub>	Kit/2 grids
SGG-K60	SG Gold Kit- 60 nm	Kit for internal standards 60 nm Au NP NIST SRM	SiO <sub>2</sub>	Kit/10 grids
SGG-K30	SRM Gold Kit- 30 nm	Kit for internal standards 30 nm Au NP NIST SRM	SiO <sub>2</sub>	Kit/10 grids
SGG-K10	SRM Gold Kit- 10 nm	Kit for internal standards 10 nm Au NP NIST SRM	SiO <sub>2</sub>	Kit/10 grids
SGK-A1-B	LinkedON Amine Kit	Linker kit for covalent binding of amines	SiO <sub>2</sub>	Kit/ 10 grids
SGK-T1-B	LinkedON Thiol Kit	Linker Kit for covalent binding of sulfhydryls	SiO <sub>2</sub>	Kit /10 grids
SGK-C1-B	LinkedON Carboxy Kit	Linker kit for covalent binding of carboxyls	SiO <sub>2</sub>	Kit /10 grids
<b>Accessories</b>				
SGHK-110/P	Handling Kit	Basic/Premium Smart Grids Handling Kit		Ea.
TS630/S-10	SMART Grids Tack Strips	Tack strips with and without adhesive backing for sample handling/processing		10/pk

<sup>s</sup>SiO<sub>2</sub> available with 25 nm and 75 nm membranes or as frames (no membranes).

SiN available with 5 nm membranes only. Note: SiN grids will not fit all TEM holders.

\* Indicates hydrophilic grids

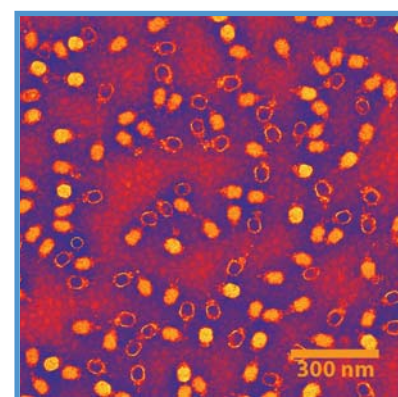


Gold NP on NanoPlus Grid

For more information or to place an order,  
please contact:

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Phone: (541) 359-4710  
Fax: (541) 550-1613

[www.dunesciences.com](http://www.dunesciences.com)



Bacteriophage Phi29 on  
BioLysine Grid