Preparation

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ion is on the order of 45
nt bond; in comparison,
l.

ne hydrophobic, van
thylene carbons on
layers, this interaction
o maximize the
er the overall surface
s from an alkane chain
ins of this length,
hains can overcome the
m.[6,7]

in **Figure 1**. (next
as containing 3 parts:
o a noble metal surface,
thylene groups, $(CH_2)_n$),
oned above, the sulfur
groups act as the main
ethiols. The head group
sired group can be used
ype of chemistry.

urface can be created
), hydrophilic (hydroxyl
nt (ethlylene glycol head
, azide, carboxyl, amine
to custom design a

C 1s	O 1s	S 2p	Au 4f
64.5	19.1	1.3	15.1
65.3	20.9	1.2	12.6
55.9	17.3	2.3	24.5
56.2	17.3	2.8	23.7
45.6	12	4.3	38.1
46.2	13.6	4	36.2

decyl)tetra(ethylene glycol); Aldrich
tic acid

m Table 1 rescaled without the
nparison of the atomic percentages
n the solution mixture atomic
ble 2, the experimental values
ulated values. The atomic
cally observed to be lower than
n by the overlying monolayer. This
EG_4thiol. The fact that the sulfur
onolayers is close to the predicted
layers are disordered (consistent
ntages) or that there is a high
on the surface (which has a high
r vs. the other atoms).

k cover),
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for the applications

on Head Group
Mannose
NTA, Peptide, ydrates
l
eptide, PEG_n
COOH, NH_2, OH, SH

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Product No.	
328375-1G	22.60
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446173-50ML	50.00
175617-25G	18.70
16494-250MG	130.00
673560-50MG	157.00

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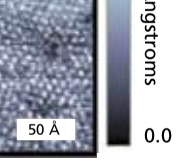

croscopy image of a 24 h
M on a Au{111} substrate. Image
tunnel = 3.0 pA. A)
ws several monatomic step edges and
olution: 200 Å × 200 Å; molecular
e.

commonly observed in thiol
AMs show depressed domain
otational domains of the 1-AD
st to alkanethiolate SAM systems,
omain boundaries associated
with differing tilts, rotational and
nd stacking faults.[11-13] **Figure 1 (B)**
M image with molecular resolution
D SAM, showing individual
xagonally closed-packed structure
ing of 6.9 ± 0.4 Å. This lattice
er than the nearest-neighbor
SAMs and can be attributed to
-AD molecules compared to the
inantly all-trans) alkyl chains of

k cover),
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as light) background
rn could not be formed
eliminates the need
lvent exposure is
dation of the pattern
ern is reduced due to
ement printing, the
re the elastomeric
, a solvent exposure
e stamping steps can
ures, circumventing the
eighboring patterns in

s of 1-adamantanethiol
bstrates. Exploiting
nanoscale-separated
ce common chemical
lateral movement of

ch, Army Research
jects Agency, National
search, Semiconductor
ch are gratefully

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	643246-5EA	371.50
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	643254-24EA	416.50
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ctadecyl trichlorosilane
e electron traps and
ductors (electrons are

t with SAMs also
ganic semiconductors.[6]
emiconductor with the
r mobility. Its charge
pending on the types
This difference is
of the first pentacene
.[6]

r semiconductor

rs should be as thin
th a high dielectric
well-ordered densely
ble high quality
SAM is used as the
nce low voltage organic
-assembled multilayers,
mance dielectric layers
sed for initiating
c layers **Figure 3**.[9]

layer.

ers for patterning

active semiconductor layer has to
inimize cross talk between devices.
and source electrodes need to
are separated by at most a few
application requirements.

ng methods, such as ink-jet
nd offset printing,[15-17] SAM
n used for selective deposition
through patterned wettability or
5.[18,19] Patterned SAM layers can be
photolithography or microcontact
ttern organic semiconductors,
d as an etch resistant layer to
lm underneath a thiol SAM to
atterned SAM layers have also
oless plating of patterned metal
ates.[22]

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-Cl
33386 (99%)
46963 (97%)
48591 (97%)
30569 (98%)
2356 (80%)
90%), **74762** (85+%)

660450-25ML	188.50

onstant are governed by
erials have been successfully
ting polymers,[4] conjugated

sigma-aldrich.com/selfassembly.

	215.00
	215.00
	175.00

cussion of the differences between
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k cover),
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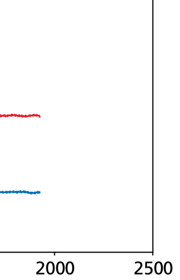

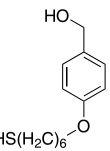

n Prod. No. **673560**

tic Nanotether™ (red) vs
d by solvent wash. Arrow

ster and after
r has a higher
han the monothiol
overage. We believe
ol wash is due to

ules including flexible linear, rigid-
s offer unique design capabilities
variety of ligands through
ctionalities while controlling the
ther. These types of constructs can
nment to various surfaces and, on
onalized for covalent coupling of
all organic ligands, all of which can
ne another and be connected to
s with varying degrees of rigidity. A
mple Nanotether BPA (Aldrich Prod.
r as part of a poly(ethylene glycol)
ent antifouling surface.

modular construct shown in
alkane spacer with functional
ligand. In effect, it becomes a
ny different assay applications in
resented as if it were on a cell
cation is shown in Figure 4 in which
e "bait") has been covalently
drazide-terminated Nanotether
674370). With a PEGolated spacer
swing free in aqueous solvent, to
ng.

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0MG	350.00
0MG	367.00

areas of RNA
a leading developer
inority equity stake in

of siRNA and other
s in the area of cell-
on protein activity and
Lawrence, Ph.D. from
noteworthy scientists

ach is being
chnologies to provide

Volume (mL)] x [C x 10^{-6} mol/ml] x

can convert the mass to a volume
ol. Use a calibrated micropipette for
liquid thiols.

ution. Prepare enough solution for
olution concentration is constant
en preparing mixed thiol solutions,
each thiol separately, then mix
tions for the final stock solution.

ners with solvent by squirting ~3 to
of the containers. Repeat 2–3 times
er. Rinse all beakers, tweezers,
xperiment with solvent. Label all

e volume of solvent into the clean

olume) of thiol, to the solvent.
–10 min to dissolve.
the planned volume of solution
ner.

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