PCT/US/2019/018565, the entire contents of which in incorporated herein by reference.

[0072] As would be appreciated, other attachment chemistries are available for attaching an attachment moiety to a conductive channel. The amine-NHS and maleimide-thiol examples given above are but representative examples, and other known attachment chemistries could be used, such as those disclosed in Table 1 above, or others. Any of these or other, equally suitable attachment chemistries could be used to attach attachment moieties to a surface of a conductive channel.

[0073] The number of surface anchoring points can be controlled by spiking in NHS-PEG that lacks maleimide group to create NTA. This gives the first generation Ni-NTA surface with controllable NTA functional groups (Figure 3). The 2nd generation NTA surface is created by first carbonyl diimidazole (CDI) activation of the carboxylic acid groups from 1st generation NTA, followed by reaction with a amine-NTA (Figure 4). This can be repeated to create 3rd or even higher generation of dendrimeric NTA surface.

[0074] The examples set forth below and recited in the claims can be understood in view of the above definitions.

EXAMPLES

[0075] The following illustrate particular non-limiting examples in accordance with aspects of the present disclosure, but are by no means intended to limit the scope thereof.

[0076] In an example, one, two, or three generations of NTA were formed on a substrate as test attachment moiety complexes as disclosed then bound to green fluorescent protein (GFP) containing 6-His as binding moiety as disclosed herein (with a linker including PEG_2). Then fluorescence was quantified following different durations of storage at room temperature for up to one week. To attach 6-His-tagged GFP, the NTA surface was briefly washed with 40 mM NaOH or 100 mM NaHCO3, then water, ensure COOH deprotonated. To load Ni, surface was incubated in 1% NiSO4 at room temperature for 30 min or 1 hr, followed by water wash 3X, then wash 2X with protein immobilization buffer (HEPES buffer: 50 mM HEPES, pH 7.5, 500 mM NaCl, 0.05% tween-20). The high salt concentration and detergent helps to reduce nonspecific binding of his tag protein. Surface is then incubated with 6-His-GFP at desired concentration (e.g. 1 or 10 ug/mL) in immobilization buffer for 1 hr, followed by buffer wash 5X.