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CONTROLLED FORMATION POLYSTYRENE (CORE)-POLYGLYCIDOL (SHELL) MICROSPHERE ASSEMBLIES ON HOMOGENEOUSLY MODIFIED MICA SURFACES

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We will report on various morphologies of 2-D and 3-D assemblies of hydrophobic polystyrene core/hydrophilic polyglycidol shell nano- and microspheres deposited on mica plates **modified uniformly** with γ -aminopropyltriethoxysilane (APTS). Assemblies were obtained either from suspensions (in water or in ethanol) containing one type of particles or from suspensions of mixtures of two kinds of particles with different diameter but with a narrow diameter distribution (for example, $\bar{D}_n = 1.002 \mu\text{m}$, $\bar{D}_w / \bar{D}_n = 1.053$ and $\bar{D}_n = 0.351 \mu\text{m}$, $\bar{D}_w / \bar{D}_n = 1.008$). Assemblies were formed using the following methods: (a) drying of drops of suspensions deposited onto surface of mica substrate, (b) drying of suspension in which mica plates were immersed perpendicularly to the liquid-air interface and (c) by adsorption of particles onto mica plates moving perpendicularly from suspension of particles through water-air interface. Details of the latter method were reported in Ref. 1. Depending on the method of particle deposition various kinds of morphologies of particle assemblies were obtained. In spite that surface of the mica substrate was uniform particle assemblies formed quite regular and well controlled patterns. SEM microphotographs showing examples of these morphologies are given below.

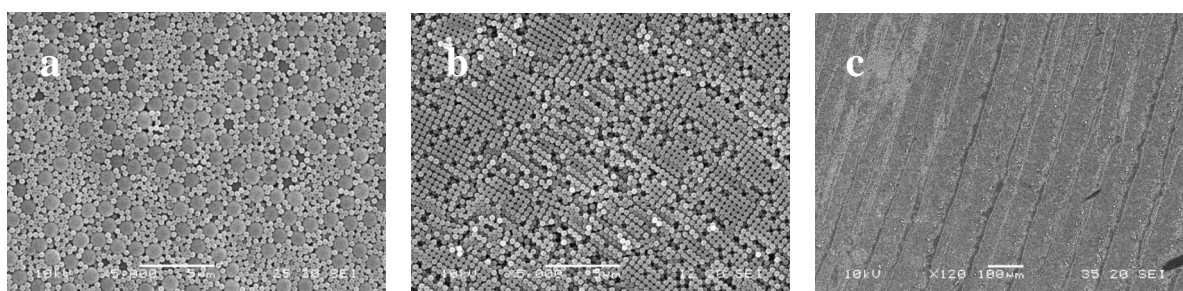


Figure. Particle assemblies formed according to methods: a, b and c described in text

Suitability of particle assemblies, with illustrated above morphologies, for construction of biosensors will be discussed.

References

1. E.Przerwa, S.Sosnowski. S.Slomkowski, Langmuir, **20**, 2004, 4684.