"Bio-Templated Systems for Nanoelectronics"

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In our research we use bio-templated systems to realize one-dimensional conducting nanowires and nanodevices for scientific investigation of electrical charge transport in these systems, for nanoelectronics and for nanotechnology applications. One example is dsDNA and its synthetic derivatives. Within this frame we measured electrical charge transport in dsDNA, measured the energy level spectrum of dsDNA, showed polarizability of DNA derivatives and more. I will briefly review this activity. Another example for bio-templated systems is the SP1 protein hybridized with various nanoparticles to form memory units and protein-particles conducting chains. We demonstrate the construction of various building blocks, acquiring specific attachment to gold or Si surfaces, array formation and finally charging and logic operations in hybrid SP1-nanoparticle systems. I will review this activity in more details. The research is conducted by my group in close collaboration with several groups from complementary fields.