

# **DNA Directed Assembly of a Field Effect Transistor in a Test Tube**

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The realization of complex, molecular scale devices and circuits will most likely rely on self-assembly directed by the information encoded into some ingredient molecules. The large amount of information that can be encoded into DNA molecules and the rich arsenal of proteins that interact with them single out DNA as a natural assembly system. In the talk I'll present a novel assembly strategy based on homologous genetic recombination processes. I'll show that recombinant proteins facilitate sequence specific lithography and, hence, realization of electronic devices by DNA templated assembly. The highlight would be a carbon nanotube based fully functional field effect transistor assembled in a test tube together with the metal wires contacting it. The fundamental obstacles in the realization of complex circuits will be emphasized and an algorithmic approach to the synthesis of the large variety of DNA molecules needed for elaborate electronics will be demonstrated.