

## Atomic And Molecular Wires

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### **Physics - Atomic wires of carbon**

Here, we show that the atomic structure of the substrate can control the direction of the wires and consequently, complex molecular assemblies can be formed. The electronic decoupling of the molecules by one or two monolayers of KBr from the Cu(111) substrate is found to be insufficient to enable comparable growth conditions to bulk ionic materials.

### **Electrons hop to it on twisted molecular wires**

We developed a method for simultaneous measurements of conductance and thermopower of atomic and molecular junctions by using a microheater-embedded mechanically-controllable break junction. We find linear increase in the thermoelectric voltage of Au atomic junctions with the voltage added to the heater. We also detect thermopower oscillations at several conductance quanta reflecting the quantum confinement effects in the atomic wire.

## **Negative differential resistance and rectifying behaviors**

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Fig. 3 shows the electron transmission probability as a function of energy for a series of polycyclic aromatic hydrocarbon (PAH)-based molecular wires having a cis configuration of polyacetylene chains. For benzene, anthracene, and tetracene a broad and substantial resonance peak occurs at  $-5$  eV. For naphthalene-based molecular wires, however, this resonance peak disappears almost completely.

## **Ultrathin inorganic molecular nanowire based on ...**

From density-functional theory, several groups [9, 10] have made predictions that carbon atomic chains should be nearly perfect molecular wires, irrespective of the presence of bond alteration.

## **Quantum interference in polycyclic hydrocarbon molecular wires**

Molecular wires are composed by several-nanometer-scale long molecules that have alternating single and double chemical bonds. Orbitals, which are states that electrons can occupy around an atom or...

## **Atomic And Molecular Wires**

Subnanoscale wires can be fabricated either by surface physicists (atomic wires) or by synthetic chemists (molecular wires). Both communities present their foremost advances using, for example, STM to assemble atomic lines atom for atom, to fabricate a mask for such a line or using the wide range of chemical synthesis techniques to obtain long, rigid and conjugated oligomers.

## **Oriented growth of porphyrin-based molecular wires on**

...

Molecular wires conduct electricity. They typically have non-linear current-voltage characteristics, and do not behave as simple ohmic conductors. The conductance follows typical power law behavior as a function of temperature or electric field, whichever is the greater, arising from their strong one-

dimensional character.

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Most types of molecular wires are derived from organic molecules. One naturally occurring molecular wire is DNA . Prominent inorganic examples include polymeric materials such as  $\text{Li}_2\text{Mo}_6\text{Se}_6$  [1] and  $\text{Mo}_6\text{S}_9-x\text{I}_x$ , [2] [3] [4]  $[\text{Pd}_4(\text{CO})_4(\text{OAc})_4\text{Pd}(\text{acac})_2]$ , [5] and single-molecule extended metal atom chains (EMACs) which comprise strings of transition metal atoms directly bonded to each other. [6]

## **Electrons hop to it on twisted molecular wires ...**

Fabrication of atomic/molecular wires Combine spectroscopic methods-Angle-resolved photoemission-Two-photon photoemission - Scanning tunneling spectroscopy (Filled vs. empty states, real space vs. momentum space)

## **Atomic and molecular wires (Book, 1997) [WorldCat.org]**

Molecular wires are composed by several-nanometer-scale long molecules that have alternating single and double chemical bonds. Orbitals, which are states that electrons can occupy around an atom or...

## **Molecular wire - Wikipedia**

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## **Atomic And Molecular Wires - greylikesnesting.com**

The electronic transport properties of molecular wires made of carbon atomic chains (triyenes) capped with benzene are investigated using nonequilibrium Green's function in combination with density functional theory. The results show that the anchoring group plays a crucial role in determining the overall conductivity of the molecular junction. Negative differential resistance can be observed when the molecular wire contacts Au electrodes through a dithiocarboxylate linker on both sides ...

## **Inelastic Current–Voltage Characteristics of Atomic and ...**

The anionic molecular wire was partly neutralized by proton exchange. The chemical formula of the molecular wire was  $(\text{NH}_4)_n [\text{HTeMo}_6\text{O}_{21}]_n$ , indicating that one  $[\text{HTeMo}_6\text{O}_{21}]^-$  interacted ...

## **Atomic and molecular wires - NASA/ADS**

Atomic Depassivation and Metallization of the Si(100)-2x1:H Surface; T.-C. Shen, et al. Controlled Manipulation of Atoms and Molecules and Formation of Nanostructures with the Scanning Tunneling Microscope; G. Meyer, et al. Molecular Wires. Organic Molecular Wires: Theoretical Analysis of the Electronic Coupling to Metal Electrodes and of the ...

## **Electronic Properties of Atomic Wires: from Semiconductor ...**

In the case of the gold point contact, our results are in good agreement with recent experimental data. For the molecular junction, we find that the inelastic I–V curves are quite sensitive to the structure of the contact between the molecule and the electrodes, thus providing a powerful tool to extract the bonding geometry in molecular wires.

## **Thermoelectric voltage measurements of atomic and ...**

"Atomic and Molecular Wires". It was sponsored by the Ministry of Scientific Affairs Division special program on Nanoscale Science with the support of the CNRS and the Max Planck Institute. Scientists working or interested in the properties of wires at a subnanoscale were brought together in Les Houches (France) from 6 to 10 May 1996. Subnanoscale wires can be

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The study of molecular electronics has an ambitious but realistic goal: the use of synthesis, assembly and miniaturation on the molecular level to achieve a huge density of devices such as molecular wires, rectifiers, switches, transistors and memories. With a characteristic length about one nanometer, the molecules are also expected to provide unprecedented confined systems

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for the study of ...

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