

Symposium One-dimensional Metals: Reality or Fiction (SYOM)

jointly organized by
 the Thin Films Division (DS),
 the Surface Science Division (O),
 the Semiconductor Physics Division (HL), and
 the Low Temperature Physics Division (TT)

Norbert Esser
 Leibniz-Institut für Analytische
 Wissenschaften e.V.
 Albert-Einstein-Str. 9
 12489 Berlin
 norbert.esser@isas.de

Herbert Pfnür
 Institut für Festkörperphysik
 Leibniz Universität Hannover
 Appelstr. 2
 30167 Hannover
 pfnuer@fkp.uni-hannover.de

Christoph Tegenkamp
 Institut für Festkörperphysik
 Leibniz Universität Hannover
 Appelstr. 2
 30167 Hannover
 tegenkamp@fkp.uni-hannover.de

One-dimensional (1D) electronic systems have attracted great attention because of their exotic electronic properties including quantization of conductance, Peierls instability, charge-density waves (CDW), spin-density waves (SDW), triplet superconductivity, and Luttinger-liquid behavior. These are due to their reduced dimensionality and the concomitant high electronic correlations. Strictly, one-dimensional systems are a theoretical idealization as thermal fluctuations destroy any long-range order at finite temperature and quantum fluctuations prevent the spontaneous breaking of a continuous symmetry even at $T = 0$. Thus only the coupling to an environment stabilizes low dimensional structures and enables the access to those exotic electronic properties. Real systems couple to a three-dimensional environment, even if they are extremely anisotropic such as nanowires. However, the underlying mechanisms are largely unexplored at this point, but are decisive for the understanding of 1D-physics in 2D- and 3D-environments.

This symposium takes a critical look both from an experimental and theoretical side. By different approaches including bulk materials, wire arrays and single wires grown by self assembly on surfaces the current status of research is presented. The invited talk session is complemented by a poster session

Overview of Invited Talks and Sessions

(Lecture room: HSZ 02, Posters: P1)

Invited Talks

SYOM 1.1	Fri	9:30–10:10	HSZ 02	Atomic-scale dopant wires for quantum computer architectures — •MICHELLE Y SIMMONS
SYOM 1.2	Fri	10:10–10:50	HSZ 02	$1 + \delta$: Tuning the Dimensionality of Organic Conductors — •MARTIN DRESSEL
SYOM 1.3	Fri	11:10–11:50	HSZ 02	Spectral and transport properties of one-dimensional correlated electrons — •VOLKER MEDEN
SYOM 1.4	Fri	11:50–12:30	HSZ 02	Atomic nanowires on surfaces: Spectroscopic reality versus theoretical fiction — •RALPH CLAESSEN

Sessions

SYOM 1.1–1.4	Fri	9:30–12:30	HSZ 02	Symposium One-dimensional Metals: Reality or Fiction (jointly organized by DS, HL, O, TT)
SYOM 2.1–2.27	Thu	16:00–19:00	P1	Posters: One-Dimensional Metals: Reality or Fiction (jointly organized by DS, HL, O, TT)