

SEMINARIUM Z MAGNETYZMU I NADPRZEWODNICTWA

Uprzejmie zawiadamiamy, że w **środe**

26 maja 2021 r., o godz.10:00

odbędzie się seminarium **on-line (link podany jest na stronie IF PAN),**

na którym

prof. dr. Fabian O. von Rohr

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wyłosi referat na temat:

“Effect of electron count and chemical complexity in the Ta-Nb-Hf-Zr-Ti high-entropy alloy superconductors”

High-entropy alloys (HEA) are a new class of materials that consist of several principal elements arranged on simple lattices. These structures are stabilized by the high configurational entropy of the random mixing of the elements. HEAs can display novel, highly tunable properties such as, for example, excellent specific strength, superior mechanical performance at high temperatures, and fracture toughness at cryogenic temperatures, making them promising candidates for future applications. The recently discovered body-centered cubic (BCC) Ta-Nb-Hf-Zr-Ti high-entropy alloy superconductor appears to display properties of both simple crystalline intermetallics and amorphous materials; e.g., it has a well-defined superconducting transition along with an exceptional robustness against disorder. In this presentation, we will show that the properties of this superconducting high-entropy alloy are strongly related to the valence electron count and that the superconducting transition temperatures T_c of these alloys fall between those of analogous crystalline and amorphous materials. We find that despite the large degree of randomness and disorder in these alloys, the superconducting properties are nevertheless strongly dependent on the chemical composition and complexity. We argue that high-entropy alloys are excellent model systems for understanding how superconductivity and other collective quantum states evolve from crystals to amorphous solids.

Serdecznie zapraszamy

Roman Puźniak
Andrzej Szewczyk
Henryk Szymczak