# SEMINARIUM Z MAGNETYZMU I NADPRZEWODNICTWA

Uprzejmie zawiadamiamy, że w **środę**

## 17 marca 2021 r., o godz.10:00

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

na którym

## Dr Kinga Lasek

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*Institute of Physics, Polish Academy of Science, Aleja Lotnikow 32/46, PL-02668 Warsaw, Poland*

wygłosi referat na temat:

## "Properties of 2D transition metal tellurides synthesized by van der Waals epitaxy"

Layered materials, in particular the family of transition metal dichalcogenides (TMDs), have fascinated the materials science community for some time. A weak van der Waals (vdW) type interlayer interactions, along with, very often, thickness dependent electronic properties, makes TMDs interesting from both fundamental and applications aspects. However, the limited number of two-dimensional (2D) TMDs with ferromagnetic properties restricts these materials for spintronic applications. Thus, search for suitable 2D TMDs materials becomes even more important.

In this talk, we will present the epitaxial growth, surface, electronic and magnetic properties of mono- to few layers thick selected transition metal tellurides with a particular focus on Cr-tellurides. Combined experimental (STM, XMCD, VSM, and GIXRD) and ab-initio studies revealed complex thickness and growth conditions dependent magnetic properties of these materials. We will present the successful synthesis of monolayer $CrTe_2$, a compound that is only metastable in its bulk form, and a few-layer thick intercalation compounds $Cr_{1+\delta}Te_2$ (where the $\delta$ represents the self-intercalated Cr atoms). The latter was found to exhibit Curie temperature ($T_c$) up to 250 K and a strong perpendicular magnetic anisotropy. Moreover, both properties strongly depend on the post growth annealing temperature.

Our results lay the foundation for the potential exploitation of 2D layered self-intercalation compounds as a 'building block' of vdW heterostructures, including heterostructures combining proximity coupling to ferromagnetic layers.

Serdecznie zapraszamy

Roman Puźniak
Andrzej Szewczyk
Henryk Szymczak