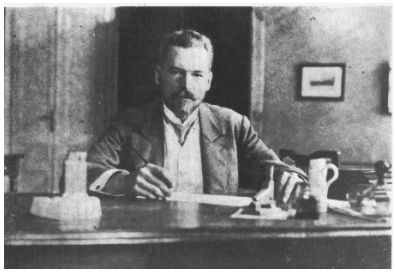

Contribution ID: **27** Type: **talk**

Saturated packings of convex anisotropic objects under random sequential adsorption protocol

Tuesday, 4 September 2018 11:45 (20 minutes)

The problem of packing hard shapes into limited space has an ancient history and is still of great importance from both utilitarian and fundamental point of view. Random packings are especially important due to their potential application in granular matter and life sciences. There are a number of protocols that allow to generate random packings. One of them is random sequential adsorption. This method is based on consecutive iterations of the following steps:

- a virtual particle position and orientation in case of anisotropic shapes is selected randomly inside the packing;
- if the virtual particle does not intersect with any object on the plane it is added to the packing. Otherwise it is removed from the system and abandoned.

When there is no more place for another object, the packing is called saturated. Direct implementation of this algorithm is highly inefficient for almost saturated packings because a very large number of tries is needed to add next shape. Moreover this method does not stop when packing is saturated already. Here, we present an algorithm to generate two-dimensional, saturated packings built of identical, unoriented, anisotropic convex shapes. The method consists in tracking regions where the next shape can be added. The algorithm was tested on packings built of spherocylinders and ellipses of different width-to-height ratio.

This study was supported by grant no. 2016/23/B/ST3/01145 of the National Science Centre, Poland.

Primary author: Mr CIESLA, Michal (M. Smoluchowski Institute of Physics, Jagiellonian University, Kraków, Poland)

Co-authors: Mr HAIDUK, Karol (Jagiellonian University); Mr KUBALA, Piotr (Jagiellonian University)

Presenter: Mr CIESLA, Michal (M. Smoluchowski Institute of Physics, Jagiellonian University, Kraków, Poland)

Session Classification: Tue noon