

## VIRTUAL SEMINAR Thursday, 21.01.2021 at 13:00

## Low-activation tungsten carbide-based composite for fusion application

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One of the possible ways to produce 'clean' energy is fusion of light atoms. In order to build such power plant, it is vital for the materials to meet the requirements of extreme conditions in the fusion reactor, such as high temperature, thermal shocks, vacuum, the proximity of plasma and irradiation with neutrons. Tungsten (W) is a possible candidate for plasma facing material. It has great mechanical and thermal properties. But in next generation of fusion power plants, the conditions will be harsher than ever. The components will be exposed to such temperatures where W would recrystallize, which leads to a deterioration of its' mechanical properties. Also in case of severe accidents, W is not ideal material because it is prone to oxidation.

That is why we propose substitution of W-based material with tungsten carbide (WC) based cemented carbides with low-activation binder phase. They are less prone to oxidation and have better ductility due to the metallic binder. There is also possibility of manufacturing binderless WC, with sufficient mechanical and thermal properties. In the seminar I will present recent results regarding binderless WC.

Kindly invited.