



Posudek oponenta habilitační práce

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| Masarykova univerzita | |
| Fakulta | Přírodovědecká fakulta |
| Obor řízení | Fyzika plazmatu |
| Uchazeč | Mgr. Pavel Souček, Ph.D. |
| Pracoviště uchazeče, instituce | Ústav fyzikální elektroniky, Přírodovědecká fakulta, Masarykova univerzita Brno |
| Habilitační práce | Preparation of nanostructured hard protective coatings by magnetron sputtering |
| Oponent | Dr. Katalin Balázs |
| Pracoviště oponenta, instituce | Hungarian Academy of Sciences, Centre for Energy Research, Institute for Technical Physics and Materials Science, Thin Film Physics Department |

The habilitation thesis deals and summarise the research of magnetron sputtered nanostructured hard protective coating. The scientific importance of research is supporting with a high impacted publications and their citations.

The habilitation thesis covers 36 pages without attached 10 publications. The first chapter is a short introduction. The second chapter describes the nanocomposite TiC/a:-C:H coatings, mainly the behaviour of deposition process and plasma parameters on properties of deposited coatings. The third chapter summarizes the development of different type of nanostructured coatings containing molybdenum, boron and carbon.

Questions:

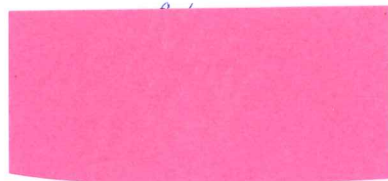
1. RF, DC and HiPIMS sputtering methods were used for deposition. Can you describe the strengths and weaknesses of these methods from the point of view of TiC/a:C-H coatings deposition?
2. The effect of nickel doping on properties of nanocomposite TiC/a:C-H coatings was studied. The experiments showed that the Ni doping didn't lead to deposition of coatings with

higher maximal hardness. What was the volume in at% of Ni addition? What do you think about the incorporation of other elements ?

Conclusion

The habilitation thesis "Preparation of nanostructured hard protective coatings by magnetron sputtering" meets the habilitation requirements in scientific field of Plasma Physics. I recommend to award to Mgr. Pavel Soucek, PhD. pedagogical title **docent**.

Budapest, 2018. May 22



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podpis