



## **Assoc. Prof. RNDr. František Lofaj, DrSc.**

Senior Scientist  
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of Sciences  
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### **Current position:**

Senior scientist  
Deputy-head of the **Division of Ceramic and Non-metallic materials**

### **Profile:**

Asoc. Prof. RNDr. František Lofaj, DrSc., specializes on the deposition and properties of hard coatings including investigations of their structure and measurement of the properties of thin films as well as on the optimization of the mechanical and tribological properties of nanocomposite coatings prepared by magnetron Technologies. During the last 5 years, he was the main investigator of 3 APVV project in the field of the development of coatings with improved hardness and oxidation resistance, 2 VEGA projects on the development of PVD coatings, 2 bilateral projects and 1 international project M-ERA.NET in the field of coatings with improved lubrication properties. He was a supervisor of 5 PhD graduates a 6 Master graduates in the field of thin coatings, he participated in 6 expertises, organized 4 international conferences in the field of measurement of mechanical properties. He is an author and co-author of more than 150 scientific publication, 96 of them included in Scopus database, 22 non-CC publications, 64 conference papers, he is also a coauthor of 3 patentov, he was cited at least 538 times and his h-index is 12.

### **Work experience:**

1983 – until now Institute of Materials Research of the Slovak Academy of Sciences  
1994-1997 Japan Fine Ceramic Center, Nagoya, Japan, STA Fellow  
1999 -2000 National Institute of Standards and Technology (NIST), Gaithersburg, USA,  
J.W. Fulbright Fellow  
2000 - 2001 The Catholic University of America, Washington D.C., USA  
2002 - 2004 Institut für Keramik im Maschinenbau, Universität Karlsruhe, Karlsruhe, SRN,  
AvH Fellow  
2005 - 2007 Institute for Energy, JRC-EC, Petten, Holandsko, EC Fellow  
2013-2018 Head of the division and department

### **Organisation of Scientific Meetings:**

2017 Chairman of Organization and Scientific Committees, Local Mechanical Properties, LMP2017 conference, Košice, Slovakia  
2014 Chairman of Organization and Scientific Committees, Local Mechanical Properties, LMP2014 conference, Vysoké Tatry, Slovakia  
2010 Chairman of Organization and Scientific Committees, Local Mechanical Properties, LMP2010 conference, Smolenice, Slovakia  
2018 Member of the Scientific Committee, Instrumented Indentation Workshop IIW5, Sapporo, Japan  
2015 Member of the Scientific Committee, Instrumented Indentation Workshop IIW4, Dallas, USA  
2016, 2017, 2018 Member of the Scientific Committee, conference Coatings and Layers VaP, Rožnov pod Radhoštěm, Czech Republic.

**Projects:** (max. 5 most important projects led by the applicant)

1. APVV 17-0320, Multicomponent boride and nitride PVD coatings for ultrahigh temperature applications (2018-2021)
2. APVV 14-0173, Multicomponent nanocomposite coatings prepared by highly ionized deposition technologies (2015-2018)
3. M-ERA RUS Plus, LightMat4Space, Lightweight nanocrystalline aluminium based materials for space applications (modeling and technology verification) (2015-2017)
4. VEGA 2/0098/14 Modelling of stresses during nanoindentation and mechanical loading in composite systems (2014-2016)
5. APVV 0520-10, High temperature oxidation resistant nanocomposite coatings with improved lifetime (2011-2013)

**Five representative publications:****Researcher ID (in SCOPUS): 7004164906**

1. **LOFAJ, F.**, KABÁTOVÁ, M., KLICH, M., VAŇA, D., DOBROVODSKÝ, J., The comparison of structure and properties in DC magnetron sputtered and HiPIMS W-C:H coatings with different hydrogen content, *Ceramics Int.*, in press 2018.
2. **LOFAJ, F.**, NÉMETH, D., The effects of tip sharpness and coating thickness on nanoindentation measurements in hard coatings on softer substrates by FEM, *Thin Solid Films* 644 (2017) 173-181
3. **LOFAJ, F.**, KVETKOVÁ, L., HVIŠČOVÁ, P., GREGOR, M., FERDINANDY, M., Reactive processes in the high target utilization sputtering (HiTUS) W-C based coatings *J. Eur. Ceram. Soc.*, 36, (2016) 3029-3040.
4. **LOFAJ, F.**, KUČERA, J., NÉMETH, D., KVETKOVÁ, L., Finite element analysis of stress distributions in mono- and bi-cortical dental implants, *Materials Science and Engineering C*, 50, (2015) 85-96.
5. **LOFAJ, F.**, WIEDERHORN, S.M., Creep Mechanisms in Commercial Grades of Silicon Nitride, *Ceramics Science and Technology*, 2, (2010) 577-599 (Book Chapter)

**Patents:**

1. KOTTFER, D. - FERDINANDY, M. - DUSZA, J. - **LOFAJ, F.**: Patentový spis č. SK 288278 B6. Bratislava: Úrad priemyselného vlastníctva SR 2015
2. KOTTFER, D. - FERDINANDY, M. - DUSZA, J. - **LOFAJ, F.**: Patent č. 288254. Banská Bystrica : ÚPV SR 2014
3. FERDINANDY, M. - DUSZA, J. - **LOFAJ, F.** - KOTTFER, D. - HEGEDUSOVÁ, L. : Patent č. 288155. Banská Bystrica : ÚPV SR 2013

**Fellowships / Awards / Memberships in Scientific Societies:**

Science and Technology Agency Fellowship (1994-1995 a 1997), Japan

Japan Fine Ceramic Center, Fellowship (1996-97), Japan

Deutsche Forschungsgemeinschaft Stiftung v rámci projektu SFB 371, (1998) - SRN

NIST Visiting Researcher Fellowship (1999) - USA

Iketani Science Foundation Fellowship (1999) - Japan

J.W. Fulbright Fellowship (2000) - USA

United Engineering Foundation Fellowship (2001) USA

Alexander von Humboldt Fellowship (2002-2003), Germany

Europa Fellowship od A. von Humboldt Foundation (2003), France

JRC Fellowship (2005), The Netherlands

2008 Slovak Academy of Sciences Award for the achievements in R&amp;D of advanced ceramic materials – member of the group

2012 Slovak Academy of Sciences Award for the building of the infrastructure – member of the group

Member American Ceramic Society (2000 – 2011)

Member Ceramic Society of Japan (1995-1997)

Member of the Scientific Council of IMR SAS (1998 - 2016)

Chair (2008-2012) of the Scientific Council of IMR SAS

Deputy chair of the Scientific collegium of SAS for the electronics, materials research and technologies (2014-2017)

Coordinator of the scientific program „New materials and Technologies for Everybody“ within Open Academia (2016-present)

Invited lectures:

Meijo University, Japan, ISASC 2008 conference, South Korea, X<sup>th</sup> meeting of the Polish Ceramic Society, Poland, 2015, Vrstvy a povlaky 2017, Rožnov pod Radhoštěm, Czech Republic, 2017; 2017 meeting of JAST, Tokushima, Japan, 2017, IIW5 Sapporo, Japan, 2018.