

## Curriculum Vitae

**Zdenko Špitalský, MSc., PhD.**

**Nationality:** Slovak

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### **Scientific profiles:**

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### **Education:**

**1998 – 2002** Ph.D. Study in Macromolecular Chemistry, Polymer Institute, Slovak Academy of Sciences, Bratislava, Slovakia

**1993 – 1998** MSc. Study in Organic Chemistry, Faculty of Natural Sciences, Comenius University, Bratislava, Slovakia

### **Long-term Stays Abroad:**

**2004 – 2006** postdoctoral fellow at Institute of Macromolecular Chemistry, Academy of Sciences of the Czech Republic, Prague, Czech Republic; 5<sup>th</sup> Frame Program fellow – Research Training Network

**2007 – 2009** postdoctoral fellow at Institute of Chemical Engineering and High Temperature Chemical Processes - Foundation for Research and Technology, Hellas; Patras, Greece, 6<sup>th</sup> Frame Program fellow – Marie Curie Host Fellowships for the Transfer of Knowledge

### **Industrial Research Experience:**

*Duslo a.s. Sala (Slovakia)*

*VUTCh – Chemitex Žilina (Slovakia)*

### **Professional Memberships:**

Slovak Chemical Society; membership from 2000 - 2006

Board of Young Scientist, Polymer Institute, SAS; membership from 2001 - 2006

NANOFUN (international Network of Excellence); participant 2007-2009

### **Awards:**

- 2014 premium for outstanding scientific response of one paper in the category of natural and medical sciences from the Literary Fund.
- 2015 - Golden Incheba from SLOVMEDICA and NON-HANDICAP 2015 exhibition for Superhydrophobic biodegradable polymeric materials for medicinal applications by Igor Novák and Zdenko Špitalský.

### **Participation in selected research projects:**

- \* **VEGA 2/0093/16** „Electrically conductive polymer nanocomposites based on the nanostructured graphite“ - **PI**
- \* **APVV14-0518** „Research of the impact of low temperature plasma on increase the surface treatment permanence of textile material using nanosols“ - **PI**
- \* **SK-SRB-2013-0044** „Transparent, electrically conductive polymeric nanocomposites on the base of nanostructured graphite“ - **PI**
- \* **Quatar National Research Foundation - NPRP-4-465-2-173** "New Phase Change materials with Improved Heat Transfer Properties" - **PI**
- \* **SK-CZ-0174-11** "Effect of conductivity on dielectric and magnetic properties of hybrid polymer composites" – **PI**
- \* **SK-PT-0012-12** “Polymer-ceramic nanocomposites for embedded capacitors” - **PI**
- \* **SK-PT-0021-10** "New electric conductive polymeric nanocomposites based on graphene" – deputy **PI**
- \* **MNT.ERA-Net** “Applications of polymer nanocomposites with low content of graphene in electronical devices”- **PI**
- \* **APVV-0593-11** „Nanostructured Materials for Sensorics“
- \* **DAAD** “Fluorescent labels for optimization of graphene distribution in graphene/polymer nanocomposite materials with improved properties”
- \* **7<sup>th</sup> FP-MC** European Reintegration Grant “Orientation of Carbon Nanotubes in Polymer Composites”  
**PI**
- \* **6<sup>th</sup> FP–MC** Host Fellowships for the Transfer of Knowledge „High Volume Fraction Nanocomposites Incorporating Modified Carbon Nanotube Reinforcements“

- \* **5<sup>th</sup> FP**– Research Training Network “*New Hybrids Nanocomposites from Functional Nanobuilding Blocks*”
- \* **VEGA 2/0119/12** " *Graphene containing polymer nanocomposites for environmental monitoring.*" - **PI**
- \* **VEGA 2/7056/20** " *Molecular mechanisms of deformation of synthetic and biologic polymers*"
- \* **VEGA 2/3012/23** " *Statistical thermodynamics of polymer and colloid systems*"
- \* **APVT-51-044902** " *Predictions of properties and functions of biological polymers by computer modeling*"
- \* **APVV-0478-07** “*Carbon nanocomposites for chemical sensing*”
- \* **Výskum technológií a výrobkov pre INteligentné a TECHnické TEXtílie (VY-INTECH-TEX) - ITMS 26220220134:** *výskum a laboratórne overenie prípravy elektrovodivého nanosólu* – commercial collaboration with industry partner VUTCH- Chemitex Žilina - **PI**
- \* **ITMS 262 402 200 88 Centrum aplikovaného výskumu nových materiálov a transferu technológií.** Centre for applied research of new materials and technology transfer. - Program Štrukturálne fondy EÚ Výskum a vývoj. OPVaV-2011/4.2/01-PN

**Professional skills:**

- Organic synthesis, surface modification of carbon nanoparticles
- Mechanical properties (tensile testing Instron, dynamic mechanical analysis DMA Q800, rheology ARES2000 or AR2000)
- Dielectric properties (Novocontrol Concept 400)
- PC hardware and software (MS Office, Hyperchem)
- Manuscript and project preparation
- Driving license B

## **List of Publications:**

### ***Chapters:***

1. KRUPA, Igor\* - PROKEŠ, Jan - KŘIVKA, Ivo - ŠPITALSKÝ, Zdenko. Electrically conductive polymeric composites and nanocomposites. In Handbook of Multiphase Polymer Systems. - Chichester, UK : John Wiley and Sons Ltd., 2011, vol. 1, Chapter 11, p. 425 -477. ISBN 978-0-470-71420-1
2. TEIXEIRA, S. S\*. - GRACA, M. P. F. - DIONISIO, M. - ILČÍKOVÁ, Markéta - MOSNÁČEK, Jaroslav - ŠPITALSKÝ, Zdenko - KRUPA, Igor - COSTA, L. C. Electrical properties of lithium ferrite nanoparticles dispersed in a styrene-isoprene-styrene copolymer matrix. In Nanoscience Advances in CBRN Agents Detection, Information and Energy Security : NATO Science for Peace and Security Series A : Chemistry and Biology. - Dordrecht, NL : Springer Netherlands, 2015, chapter 27, P. 273-279. ISBN 978-94-017-9696-5. ISSN 1874-6489.
3. NOVÁK, Igor\* - POPELKA, Anton - ŠPITALSKÝ, Zdenko - KRUPA, Igor - TAVMAN, Sebnem. Polyolefin in Packaging and Food Industry. In Polyolefin Compounds and Materials : Fundamentals and Industrial Applications. - Switzerland : Springer International Publishing, 2016, chapter. 7, P. 181-199. ISBN 978-3-319-25980-2.

### ***Papers:***

1. Kostiuk, D., Bodik, M., Siffalovic, P., Jergel, M., Halahovets, Y., Hodas, M., Pelletta, M., Pelach, M., Hulman, M., Spitalsky, Z., Omastova, M., Majkova, E. Reliable determination of the few-layer graphene oxide thickness using Raman spectroscopy (2016) Journal of Raman Spectroscopy, 47 (4), pp. 391-394.
2. Paunovic, V., Ristic, B., Markovic, Z., Todorovic-Markovic, B., Kosic, M., Prekodravac, J., Kravic-Stevovic, T., Martinovic, T., Micusik, M., Spitalsky, Z., Trajkovic, V., Harhaji-Trajkovic, L. c-Jun N-terminal kinase-dependent apoptotic photocytotoxicity of solvent exchange-prepared curcumin nanoparticles (2016) Biomedical Microdevices, 18 (2), art. no. 37

3. Z.M.Makovic, M.D. Budimir, D.P.Kepic, I.D.Holeljajtner-Antunovic, M.T. Marinovic-Cincovic, M.D. Dramicanin, V.D. Spasojevic, D.B. Peruško, Z.Špitalský, M. Mičušík, V.B. pavlovič, B.M.Todorovič-Markovič. Study of semi-transparent, conductive thin films of electrochemical exfoliated graphene, RSC-Advanced, 2016, vol. 6, p. 39275-39283.
4. MRLÍK, Miroslav - ILČÍKOVÁ, Markéta - PLACHÝ, Tomáš - PAVLÍNEK, Vladimír - ŠPITALSKÝ, Zdenko - MOSNÁČEK, Jaroslav. Graphene oxide reduction during surface initiated atom transfer radical polymerization of glycidyl methacrylate: Controlling electro-responsive properties. In Chemical Engineering Journal, 2016, vol. 283, p. 717-720.
5. Svetlana Jovanovic - Zoran Markovic - Milica Budimir - Zdenko Spitalsky - Bojan Vidoeski - Biljana Todorovic Markovic. Effects of low gamma irradiation dose on the photoluminescence properties of graphene quantum dots. Opt Quant Electron (2016) 48:259
6. ILČÍKOVÁ, Markéta - MRLÍK, M. - ŠPITALSKÝ, Zdenko - MIČUŠÍK, Matej - CSOMOROVÁ, Katarína - SASINKOVÁ, V. - KLEINOVÁ, Angela - MOSNÁČEK, Jaroslav. A tertiary amine in two competitive processes: Reduction of graphene oxide vs. catalysis of atom transfer radical polymerization. In RSC Advances, 2015, vol. 5, p. 3370-3376
7. KRUPA, Igor - NÓGELLOVÁ, Zuzana - ŠPITALSKÝ, Zdenko - MALÍKOVÁ, Marta - SOBOLČIAK, Patrik - ABDELRAZEQ, H. W. - OUEDERNI, Mabrouk - KARKRI, M. - JANIGOVÁ, Ivica - AL-MAADEED, M. A. S. A. Positive influence of expanded graphite on the physical behavior of phase change materials based on linear low-density polyethylene and paraffin wax. In Thermochemica Acta, 2015, vol. 614, p. 218-225.
8. MOSNÁČKOVÁ, Katarína - ŠPITALSKÝ, Zdenko - KULIČEK, Jaroslav - PROKEŠ, J. - SKARMOUTSOU, A. - CHARITIDIS, C. A. - OMASTOVÁ, Mária. Influence of preparation methods on the electrical and nanomechanical properties of poly(methyl methacrylate)/multiwalled carbon nanotubes composites. In Journal of Applied Polymer Science, 2015, vol. 132, no.13, art.no. 41721.

9. NOVÁK, Igor - POPELKA, Anton - ŠPITALSKÝ, Zdenko - MIČUŠÍK, Matej - OMASTOVÁ, Mária - VALENTIN, Marian - SEDLIAČIK, J. - JANIGOVÁ, Ivica - KLEINOVÁ, Angela - ŠLOUF, Miroslav. Investigation of beech wood modified by radio-frequency discharge plasma. In Vacuum, 2015, vol. 119, p. 88-94.
10. SZYMCZYK, A. - PASZKIEWICZ, S. - PAWELEC, I. - LISIECKI, S. - JOTKO, M. - ŠPITALSKÝ, Zdenko - MOSNÁČEK, Jaroslav - ROSLANIEC, Z. Oxygen barrier properties and melt crystallization behavior of poly(ethylene terephthalate)/graphene oxide nanocomposites. In Journal of Nanomaterials, vol. 2015, art ID 382610, 10 p.
11. ŠPITALSKÝ, Zdenko - KRATOCHVÍLA, Ján - CSOMOROVÁ, Katarína - KRUPA, Igor - GRACA, M. P. F. - COSTA, L. C. Mechanical and electrical properties of styrene-isoprene-styrene copolymer doped with exfoliated graphite nanoplatelets. In Journal of Nanomaterials, vol. 2015, art ID 168485, 9 p.
12. PASZKIEWICZ, S. - PAWELEC, I. - SZYMCZYK, A. - ŠPITALSKÝ, Zdenko - MOSNÁČEK, Jaroslav - KOCHMANSKA, A. - ROSLANIEC, Z. Effect of exfoliated graphite nanoplatelets' size on the phase structure, electrical, and barrier properties of poly(trimethylene terephthalate)-based nanocomposite. In Polymer Engineering and Science, 2015, vol. 55, p. 2222-2230.
13. PASZKIEWICZ, S. - NACHMAN, M. - SZYMCZYK, A. - ŠPITALSKÝ, Zdenko - MOSNÁČEK, Jaroslav - ROSLANIEC, Z. Influence of expanded graphite (EG) and graphene oxide (GO) on physical properties of PET based nanocomposites. In Polish journal of chemical technology, 2014, vol.16, no.4, p. 45-50.
14. VALENTOVÁ, H. - ILČÍKOVÁ, Markéta - CZANIKOVÁ, Klaudia - ŠPITALSKÝ, Zdenko - ŠLOUF, M. - NEDBAL, J.- OMASTOVÁ, Mária. Dynamic mechanical and dielectric properties of ethylene vinyl acetate/carbon nanotube composites. In Journal of Macromolecular Science : Part B: Physics, 2014, vol. 53, no. 3, p. 496-512.

15. TEIXEIRA, S. S. - GRACA, M. P. F. - DIONISIO, M. - ILČÍKOVÁ, Markéta - MOSNÁČEK, Jaroslav - ŠPITALSKÝ, Zdenko - KRUPA, Igor - COSTA, L.C. Self-standing elastomeric composites based on lithium ferrites and their dielectric behavior. In *Journal of Applied Physics*, 2014, vol. 116, art.no. 224102 [8p.].
16. PASZKIEWICZ, S. - SZYMCZYK, A. - ŠPITALSKÝ, Zdenko - MOSNÁČEK, Jaroslav - KWIATKOWSKI, K. - ROSLANIEC, Z. Structure and properties of nanocomposites based on PTT-block-PTMO copolymer and graphene oxide prepared by in situ polymerization. In *European Polymer Journal*, 2014, vol. 50, p. 69-77.
17. MRLÍK, M. - MOUČKA, R. - ILČÍKOVÁ, Markéta - BOBER, P. - KAZANTSEVA, N. - ŠPITALSKÝ, Zdenko - TRCHOVÁ, M. - STEJSKAL, J. Charge transport and dielectric relaxation processes in aniline-based oligomers. In *Synthetic Metals*, 2014, vol.192, p. 37-42.
18. KRUPA, Igor - PROSTREDNÝ, M. - ŠPITALSKÝ, Zdenko - KRAJČI, Juraj - ALMAADEED, M. A. S. Electrically conductive composites based on an elastomeric matrix filled with expanded graphite as a potential oil sensing material. In *Smart Materials & Structures*, 2014, vol. 23, art. no. 125020 [9p].
19. KRUPA, Igor - NÓGELLOVÁ, Zuzana - ŠPITALSKÝ, Zdenko - JANIGOVÁ, Ivica - BOH, B. - SUMIGA, B. - KLEINOVÁ, Angela - KARKRI, M. - ALMAADEED, M. A. Phase change materials based on high-density polyethylene filled with microencapsulated paraffin wax. In *Energy Conversion and Management*, 2014, vol. 87, p. 400-409.
20. KRAJČI, Juraj - ŠPITALSKÝ, Zdenko - CHODÁK, Ivan. Relationship between conductivity and stress-strain curve of electroconductive composite with SBR or polycaprolactone matrices. In *European Polymer Journal*, 2014, vol. 55, p. 135-143.
21. PASZKIEWICZ, S. - SZYMCZYK, A. - ŠPITALSKÝ, Zdenko - MOSNÁČEK, Jaroslav - JANUS, E. - ROSLANIEC, Z. Wpływ dodatku ekspandowanego grafitu (EG) na przebieg

syntezy i charakterystyce poli(tereftalanu etylenu) modyfikowanego 1,4-cykloheksanodimetanolem (PETG). In POLIMERY-W, 2013, vol. 58, nr. 11 - 12, p. 893 - 899.

22. MOUČKA, R. - MRLIK, M. - ILČÍKOVÁ, Markéta - ŠPITALSKÝ, Zdenko - KAZANTSEVA, N. - BOBER, P. - STEJSKAL, J. Electrical transport properties of poly(aniline-co-p-phenylenediamine) and its composites with incorporated silver particles. In Chemical Papers, 2013, vol. 67, no. 8, p. 1012 - 1019.
23. Paszkiewicz S., Szymczyk A., Soccio M., Mosnacek J., Spitalsky Z., Ezquerra T.A., Roslaniec Z.: Electrical conductivity of poly(ethylene terephthalate)/expanded graphite nanocomposites prepared by in situ polymerization, Journal of Polymer Science, Part B: Polymer Physics 2012; 50 (23) , pp. 1645-1652
24. K. Czaničková, Z. Špitalský, I. Krupa, M. Omastová, Electrical and Mechanical Properties of Ethylene Vinyl Acetate Based Composites, Materials Science Forum 2012; 714, pp.193-199
25. S. Paskiewicz, Z. Roslaniec, A. Szymczyk, Z. Spitalsky, J. Mosnacek, Morphology and Thermal Properties of Expanded Graphite (EG)/Poly(ethylene terephthalate) (PET) Nanocomposites, CHEMIK, 2012; 66, 1, pp. 21-30
26. Špitalský, Z., Danko, M., Mosnáček, J., Preparation of Functionalized Graphene Sheets, Current Organic Chemistry 2011; 15 (8), pp. 1133-1150
27. Lobotka, P., Kunzo, P. , Kovacova, E. , Vavra, I. , Krizanova, Z., Smatko, V. , Stejskal, J. , Konyushenko, E.N. , Omastova, M., Spitalsky, Z., Micusik, M., Krupa, I., Thin polyaniline and polyaniline/carbon nanocomposite films for gas sensing, Thin Solid Films 2011; 519 (12), pp. 4123-4127
28. Moraitis, G., Špitalský, Z., Ravani, F., Siokou, A., Galiotis, C., Electrochemical oxidation of multi-wall carbon nanotubes, Carbon 2011; 49 (8), pp. 2702-2708



29. Kratochvíla, J., Krupa, I., Špitálský, Z., Prokeš, J., Mechanical and electrical properties of composites based on low density polyethylene and expanded graphite, *Chemické Listy* 105 (15 SPEC. ISSUE), pp. s352 (2011)
30. Moraitis, G., Špitálský, Z., Ravani, F., Siokou, A., Galiotis, C., Electrochemical oxidation of multi-wall carbon nanotubes, *Carbon* 49 (8), pp. 2702-2708 (2011)
31. Z. Spitalsky, S. N. Georga, C. A. Krontiras, C. Galiotis, Dielectric spectroscopy and tunability of multi-walled carbon nanotube / epoxy resin composites, *Advanced Composite Letters* 16, p. 179-189 (2010)
32. Z. Spitalsky, D. Tasis, K. Papagelis, C. Galiotis, Carbon nanotube–polymer composites: Chemistry, processing, mechanical and electrical properties, *Progress in Polymer Science* 35, p. 357-401 (2010)
33. Z. Spitalsky, G. Tsoukleri, D. Tasis, C. Krontiras, S. N. Georga, C. Galiotis, High volume fraction carbon nanotube – epoxy composites, *Nanotechnology* 20, p. 405702 (7pp) (2009)
34. Z. Spitalsky, C. Aggelopoulos, G. Tsoukleri, C. Tsakiroglou, J. Parthenios, S. Georga, C. Krontiras, D. Tasis, K. Papagelis, C. Galiotis, The effect of oxidation treatment on the properties of multi-walled carbon nanotube thin films, *Material Science and Engineering B* 165, p. 135-138 (2009)
35. Z. Spitalsky, C.A. Krontiras, S.N. Georga, C. Galiotis, Effect of oxidation treatment of multiwalled carbon nanotubes on the mechanical and electrical properties of their epoxy composites, *Composites A* 40, p. 778-783 (2009)

36. Z. Spitalsky, L. Matejka, M. Slouf, E.N. Konyushenko, J. Kovarová, J. Zemek, J. Kotek, Modification of Carbon Nanotubes and Its Effect on Properties of Carbon Nanotube/Epoxy Nanocomposites, *Polymer Composites* 30, p. 1378-1387 (2009)
37. Z. Spitalsky, A. Kromka, L. Matejka, P. Cernoch, J. Kovarova, J. Kotek, M. Slouf, Effect of nanodiamond particles on properties of epoxy composites, *Advanced Composite Letters* 17, p. 29-34 (2008)
38. Z. Spitalsky, I. Lacik, E. Lathova , I. Janigova , I. Chodak, Controlled degradation of polyhydroxybutyrate via alcoholysis with ethylene glycol or glycerol, *Polymer Degrad. and Stability*, 91, p. 856-861 (2006)
39. Z. Spitalsky, T. Bleha, Elastic properties of polyhydroxybutyrate molecules, *Macromol. Bioscience*, 4, p. 601-609 (2004)
40. Z. Spitalsky, T. Bleha, Elastic module of highly stretched tie molecules in solid polyethylene, *Polymer*, 44, p. 1603-1611 (2003)
41. Z. Spitalsky, T. Bleha, P. Cifra, Energy elasticity of tie molecules in semicrystalline polymers, *Macromol. Theory Simul.*, 11, p.513-524 (2002)
42. Z. Spitalsky, T. Bleha, Energetics of stretching of conformational defects in extended polymethylene chains, *Macromol. Theory Simul.*, 10, p. 833-841 (2001)
43. Z. Spitalsky, T. Bleha, Modelling of stress transfer and modulus of elasticity in interlamelaer phase of polymers, *Chem. Listy*, S94, p. 1015 (2000)