

<b>Habilitačné konanie :</b> <b>§ 76 ods.10 zákona č.131/2002 Z.z.</b> <b>§ 1 ods. 14, § 2a vyhlášky MŠ SR č. 6/2005 Z.z. v znení vyhlášky MŠVVaŠ SR č. 457/2012 Z.z.</b>	
Meno a priezvisko	Martin Weis
Dátum doručenia žiadosti o habilitačné konanie	03.12.2013
Dátum, od ktorého je habilitačné konanie prerušené a lehotu, v ktorej majú byť odstránené nedostatky žiadosti	-
Názov študijného odboru, v ktorom sa konanie uskutočňuje	5.2.13. Elektronika
Téma habilitačnej práce	Charakterizácia vybraných vlastností prvkov na báze organických polovodičov
<b>Údaje z profesijného životopisu</b>	
Akademické tituly, vedecko-pedagogické tituly, umelecko-pedagogické tituly, vedecké hodnosti	Ing. PhD.
Rok narodenia	1980
Údaje o vysokoškolskom vzdelaní, ďalšom akademickom raste a absolvovanom ďalšom vzdelávaní	2003: Stupeň: Bc. Odbor: Elektromateriálové inžinierstvo Škola: Slovenská technická univerzita v Bratislave  2005: Stupeň: Ing. Odbor: Elektromateriálové inžinierstvo Škola: Slovenská technická univerzita v Bratislave  2007: Stupeň: PhD. Odbor: Fyzika kondenzovaných látok a akustika Škola: Slovenská technická univerzita v Bratislave
Údaje o priebehu zamestnaní a priebehu pedagogickej činnosti (pracovisko/predmety)	2007 – 2009: Slovenská technická univerzita v Bratislave (odborný asistent)  2007 – 2009: Tokyo Institute of Technology (visiting scholar)  2009 – 2012: Slovenská akadémia vied v Bratislave (vedecký pracovník)  2010 – trvá: Slovenská technická univerzita v Bratislave

	<p>(vedecký pracovník)</p> <p><b>Cvičenia:</b>  Fyzika 1 (2005 - 2011)  Fyzika 2 (2004 - 2011)</p>
<p>Údaje o odbornom alebo umeleckom zameraní</p>	<ol style="list-style-type: none"> <li>1. Dielektrické materiály, polyméry, organické polovodiče a fyzikálna elektronika látok</li> <li>2. Nábojový transport a elektrické polia</li> <li>3. Tenké organické vrstvy a ich usporiadanie; vrstvy Langmuira-Blodgettovej.</li> <li>4. Nanočastice</li> </ol>
<p>Údaje o publikačnej činnosti</p>	<p><b>7.1 Vedecké práce v karentovaných časopisoch</b></p> <ol style="list-style-type: none"> <li>1. Ján Vajda, <b>Martin Weis</b>, Drahoslav Barančok, Július Cirák, Pavol Tomčík. „Study of molecular orientational order in the Langmuir monolayer. Experiment and model calculation“, <i>Applied Surface Science</i>, <b>229</b>/1-4, pp. 183-189 (2004). (IF: 1.436)</li> <li>2. Ján Vajda, <b>Martin Weis</b>, Drahoslav Barančok, Július Cirák, Pavol Tomčík. „Study of relaxation processes in monomolecular films by the step compression experiment“, <i>Central European Journal of Physics</i>, <b>3</b>(1), pp. 139-146 (2005). (IF: 0.811)</li> <li>3. <b>Martin Weis</b>, Martin Kopáni, Peter Michalka, Csaba Biró, Peter Celec, Ľuboš Danišovič, Ján Jakubovský, „Conformation study of the membrane models by the Maxwell displacement current technique and oxidative stress“, <i>Journal of Biochemical and Biophysical Methods</i>, <b>65</b> pp. 81-87, (2005). (IF: 1.403)</li> <li>4. <b>Martin Weis</b> „Kinetics of slow collapse process: thermodynamic description of rate constants“, <i>Applied Surface Science</i>, <b>253</b>, pp. 1469-1772 (2006). (IF: 1.436)</li> <li>5. <b>Martin Weis</b>, Martin Kopáni, Ján Jakubovský, Ľudovít Danihel: „Ethanol and methanol induced changes in phospholipid monolayer“, <i>Applied Surface Science</i>, <b>253</b>, pp. 2425-2431 (2006). (IF: 1.436)</li> <li>6. <b>Martin Weis</b>, Marek Vančo, Pavol Vitovič, Tibor Hianik, Július Cirák, „Study of gramicidin A-phospholipid interactions in Langmuir monolayers: analysis of their mechanical, thermodynamical and electrical properties“, <i>Journal of Physical Chemistry B</i>, <b>110</b>, pp. 26272-26278 (2006). (IF: 4.115)</li> <li>7. Pavol Vitovič, <b>Martin Weis</b>, Pavol Tomčík, Július Cirák, Tibor Hianik: „Area-pressure isotherms, surface potential and Maxwell displacement currents of Gramicidin A in an air-water interface and in a lipid monolayer“, <i>Bioelectrochemistry</i>, <b>70</b>, pp. 469-480 (2007). (IF:2.992)</li> <li>8. Pavol Vitovič, <b>Martin Weis</b>, Pavol Tomčík, Július Cirák, Tibor Hianik, „Physical Properties of lipid monolayers at presence of Gramicidin A.“ Abstract, <i>European Biophysics Journal with Biophysics Letters</i>, <b>34</b> (6), pp.656, (2007). (IF: 2.234)</li> <li>9. Katarína Gmucová, <b>Martin Weis</b>, Drahoslav Barančok, Július Cirák, Pavol Tomčík, Juraj Pavlásek: “Ion selectivity of a poly(3-pentylmethoxythiophene) LB-layer modified carbon-fiber microelectrode as a consequence of the second order filtering in volt coulometry“, <i>Journal of Biochemical Biophysical Methods</i>, <b>70</b>/3, pp. 385-390 (2007). (IF: 1.403)</li> <li>10. <b>Martin Weis</b>, Katarína Gmucová, Vojtech Nádaždy, Ignác Capek, Alexander Šatka, Martin Kopáni, Július Cirák, Eva Majková, “Quantized Double-Layer Charging of Iron Oxides Nanoparticles on a-Si:H Controlled by Charged Defects in a-Si:H“, <i>Electroanalysis</i>, <b>19</b>(12), pp. 1323-1326 (2007). (IF: 2.444)</li> <li>11. Martin Kopáni, <b>Martin Weis</b>, “Influence of alcohol on mechanical and electrical properties of thin organic films“, <i>Central European Journal of Physics</i>. <b>5</b>(3), pp.405-415 (2007). (IF: 0.811)</li> <li>12. <b>Martin Weis</b>, Radoslav Janíček, Július Cirák, Tibor Hianik, “The study of the calix[4]resorcinarene-dopamine interactions in monolayers by means of measurement of pressure-area isotherms and Maxwell displacement currents“, <i>Journal of Physical Chemistry B</i>, <b>111</b>(35), pp. 10626-10631(2007). (IF: 4.115)</li> <li>13. Martin Kopáni, <b>Martin Weis</b>, Tomáš Málek, Ján Jakubovský, „Protection effect of vitamin C on alcohol binding to phospholipid monolayers“, <i>Chemické Listy</i> <b>101</b>, pp. s197-s198 (2007). (IF: 0.431)</li> <li>14. <b>Martin Weis</b>, Ján Vajda, “Analysis of mechanically induced processes in the Langmuir film“, <i>Applied Surface Science</i>, <b>254</b>/10, pp 3093-3099 (2008). (IF: 1.436)</li> </ol>

15. Katarína Gmucová, **Martin Weis**, Vojtech Nádaždy, Eva Majková, "Effect of magnetic and inner electric field on the Ag/Co nanoparticle core orientation in a layered structure", *ChemPhysChem*, **9**, pp. 1036-1039 (2008). (IF: 3.449)
  16. Vojtech Nádaždy, Rudolf Durný, Joaquim Puigdollers, Cristobal Voz, Stéphanie Cheylan, **Martin Weis**, "Defect states in pentacene thin films prepared by thermal evaporation and Langmuir-Blodgett technique", *Journal of Non-Crystalline Solids*, **354** (19-25), pp. 2888-2891, (2008). (IF: 1.362)
  17. Tetsuya Yamamoto, Dai Taguchi, **Martin Weis**, Takaaki Manaka, Mitsumasa Iwamoto, "Electrostatic Maxwell Stress Model of the Shapes of Condensed Phase Domains in Monolayers at the Air-Water Interface", *Journal of Chemical Physics* **128** (20), pp. 204706-1 – 204706-21 (2008). (IF: 3.166)
  18. **Martin Weis**, Katarína Gmucová, Vojtech Nádaždy, Ignác Capek, Alexander Šatka, Martin Kopáni, Július Cirák, Eva Majková, "Control of Single-Electron Charging of Metallic Nanoparticles onto Amorphous Silicon Surface", *Journal of Nanoscience and Nanotechnology*. **8**, 5684–5689 (2008). (IF: 2.194)
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  20. Juraj Beňo, **Martin Weis**, Edmund Dobročka, Daniel Haško, "Mixed 2D molecular systems: mechanic, thermodynamic and dielectric properties", *Applied Surface Science*, **254**(20), pp.6370-6375, (2008). (IF:1.436 )
  21. Katarína Gmucová, **Martin Weis**, Vojtech Nádaždy, Ignác Capek, Alexander Šatka, Lívia Chitu, Július Cirák, Eva Majková, "Effect of charged deep states in hydrogenated amorphous silicon on the behavior of iron oxides nanoparticles deposited on its surface", *Applied Surface Science*, **254** , pp. 7008-7013 (2008). (IF: 1.436)
  22. Takaaki Manaka, Fei Liu, **Martin Weis**, Mitsumasa Iwamoto, "Diffusion-like electric field migration in the channel of organic field-effect transistors", *Physical Review B*, **78**, 121302-1 – 121302-4 (2008). (IF: 3.075)
  23. Daisuke Yamada, Takaaki Manaka, Eunju Lim, Ryosuke, Tamura, **Martin Weis**, Mitsumasa Iwamoto, "Probing of injected carrier distribution in Pentacene field effect transistor using optical second harmonic generation", *Journal of Applied Physics*, **104**, 074502-1 – 074502-6 (2008). (IF: 2.316)
  24. Dai Taguchi, Takashi Kawate, Ryo Miyazawa, **Martin Weis**, Takaaki Manaka, Mitsumasa Iwamoto, "Orientational ordering of 4-pentyl-4'-cyanobiphenyl molecules evaporated on multi-layered polyimide film", *Thin Solid Films* **517**, pp. 1407-1410 (2008). (IF: 1.884)
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  26. Enju Lim, Daisuke Yamada, Ryosuke Tamura, **Martin Weis**, Takaaki Manaka, Mitsumasa Iwamoto, "Observation of channel formation carriers in pentacene field-effect transistor by electric field induced optical second harmonic generation", *Thin Solid Films* , **517**, 1321-1323 (2008). (IF: 1.884)
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- (Poznámka: vybrané pre *Virtual Journal of Nanoscience & Nanotechnology*, **18**(24) (2008))
28. **Martin Weis**, Takaaki Manaka, Mitsumasa Iwamoto, "Origin of electric field distribution in organic field-effect transistor: experiment and analysis", *Journal of Applied Physics*, **105**, 024505-1 – 024505-7 (2009). (IF: 2.316)
  29. Peter Šiffalovič, Eva Majková, Lívia Chitu, Yuri Halahovets, Matej Jergel, R. Senderák, Štefan Luby, **Martin Weis**, Alexander Šatka, B. Szymanski, F. Stobiecki, A. Timmann, S. V. Roth, "Fabrication and characterization of hybrid tunnel magnetoresistance structures with embedded self-assembled nanoparticle templates", *Acta Physica Polonica A*, **115**, pp. 332-335 (2009). (IF: 0.340)
  30. Ján Jakobovič, Jaroslav Kováč, **Martin Weis**, Daniel Haško, Rudolf Srnánek, Peter Valent, Roland Resel, "Preparation and properties of thin parylene layers as the gate dielectrics for organic field effect transistors", *Microelectronics Journal*, **40**, pp. 595-597 (2009). (IF: 0.609 )
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33. Jack Lin, **Martin Weis**, Dai Taguchi, Takaaki Manaka, Mitsumasa Iwamoto, "Effect of Space-Charge Field on Injection Properties in Organic Sandwiched Structures", *Japanese Journal of Applied Physics*, **4**, 04C173-1 – 04C173-6 (2009). (IF: 1.247)
34. Takaaki Manaka, Fei Liu, **Martin Weis**, Mitsumasa Iwamoto, "Studying Transient Carrier Behaviors in Pentacene Field Effect Transistors Using Visualized Electric Field Migration", *Journal of Physical Chemistry C*, **113**, 10279 – 10284 (2009). (IF: 4.224)
35. Takaaki Manaka, Fei Liu, **Martin Weis**, Mitsumasa Iwamoto, "Mobility measurement using transient electric field in organic field-effect transistors", *Applied Physics Express (APEX)*, **2**, 061501-1 – 061501-3 (2009). (IF: 2.223)
36. Katarína Gmucová, **Martin Weis**, Monica Della Pirriera, Joaquim Puigdollers, "A comparative study of hydrogen- and hydroxyl-related pentacene defects formation in thin films prepared by Langmuir-Blodgett technique and thermal evaporation", *physica status solidi (a)* **206**(7), 1404 – 1409 (2009). (IF: 1.214)
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37. Motoharu Nakao, Takaaki Manaka, **Martin Weis**, Eunju Lim, Mitsumasa Iwamoto, "Probing carrier injection into pentacene field effect transistor by time-resolved microscopic optical second harmonic generation measurement", *Journal of Applied Physics* **106**, 014511-1 – 014511-5 (2009). (IF: 2.316)
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38. Eunju Lim, Daisuke Yamada, Ryouzuke Tamura, **Martin Weis**, Takaaki Manaka, Mitsumasa Iwamoto, "Probing of channel region in pentacene field effect transistor using optical second harmonic generation", *Chemical Physics Letters* **477**, 221 – 224 (2009). (IF: 2.169)
- (Poznámka: vybrané ako "highlight" pre webstránku *Nature Publisher Group (NPG) Asia Materials*)
39. Shuhei Yoshita, Ryouzuke Tamura, Dai Taguchi, **Martin Weis**, Eunju Lim, Takaaki Manaka, and Mitsumasa Iwamoto, "Displacement Current Analysis of Carrier Behavior in Pentacene Field Effect Transistor with Poly(vinylidene fluoride and tetrafluoroethylene) gate insulator", *Journal of Applied Physics*, **106**, 024505-1 – 024505-4 (2009). (IF: 2.316)
40. Heinz-Georg Flesch, Oliver Werzer, **Martin Weis**, Ján Jakabovič, Jaroslav Kováč, Daniel Haško, Georg Jakopič, Harry J. Wondergem, Roland Resel, "A combined x-ray, ellipsometry and atomic force microscopy study on thin parylene-C films", *physica status solidi (a)* **206**, 1727 – 1730 (2009). (IF: 1.214)
41. Wei Ou-Yang, **Martin Weis**, Xiangyu Chen, Takaaki Manaka, Mitsumasa Iwamoto, "First-order phase transition of two-dimensional ferroelectric copolymer P(VDF-TrFE) Langmuir monolayer", *Journal of Chemical Physics* **131**, 104702-1 – 104702-6 (2009). (IF: 3.166)
42. Dai Taguchi, Takashi Kawate, Ryo Miyazawa, **Martin Weis**, Takaaki Manaka, Mitsumasa Iwamoto, "Spontaneous orientational ordering of liquid crystal layer during evaporation onto silica", *Molecular Crystals & Liquid Crystals* **512**, 100-108 (2009). (IF: 0.554)
43. Dai Taguchi, Takashi Kawate, Ryo Miyazawa, Shio Inoue, Wangcen Qin, **Weis Martin**, Takaaki Manaka, and Mitsumasa Iwamoto, "Effect of Orientational Order of Tris(8-hydroxyquinolinato)aluminum(III) on Electroabsorption", *Thin Solid Films* **518**, 795 – 198 (2009) (IF: 1.884)
44. **Martin Weis**, Motoharu Nakao, Takaaki Manaka and Mitsumasa Iwamoto, "Thermionic emission model for contact resistance in organic field-effect transistor", *Thin Solid Films* **518**, 795 – 198 (2009). (IF: 1.884)
45. Jack Lin, **Martin Weis**, Dai Taguchi, Takaaki Manaka, Mitsumasa Iwamoto, "Carrier Injection and Transport in OFET investigated by Impedance Spectroscopy", *Thin Solid Films* **518**, 448 – 451 (2009). (IF: 1.884)
46. Takaaki Manaka, Motoharu Nakao, **Martin Weis**, Fei Liu, Mitsumasa Iwamoto, "Transient charge accumulation in pentacene field effect transistor with silver electrode", *Thin Solid Films* **518**, 795 – 198 (2009) (IF: 1.884)
47. **Martin Weis**, Jack Lin, Dai Taguchi, Takaaki Manaka, Mitsumasa Iwamoto, "Transient currents in organic field-effect transistor: the time-of-flight method", *Journal of Physical Chemistry C*, **113**, 18459 – 18461 (2009). (IF:

- 3.396)
48. Wei Ou-Yang, **Martin Weis**, Keanchuan Lee, Takaaki Manaka, Mitsumasa Iwamoto, "Dipolar electrostatic energy effect on relaxation process of monolayers at air-water interface: analysis of thermodynamics and kinetics", *Journal of Chemical Physics*, **131**, 244709-1 – 244709-8 (2009). (IF: 3.166)
  49. Dai Taguchi, **Martin Weis**, Takaaki Manaka, Mitsumasa Iwamoto, "Probing of carrier behavior in organic electroluminescent diode using electric field induced optical second-harmonic generation measurement", *Applied Physics Letters*, **95**, 263310/1 – 263310/3 (2009). (IF: 4.096)
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  52. Xiangyu Chen, Wei Ou-Yang, **Martin Weis**, Dai Taguchi, Takaaki Manaka and Mitsumasa Iwamoto, "Reduction of hysteresis in organic field-effect transistor by ferroelectric gate dielectric", *Japanese Journal of Applied Physics* **49**, 021601/1 – 021601/5 (2010). (IF: 1.247)
  53. Takaaki Manaka, Fei Liu, **Martin Weis**, Mitsumasa Iwamoto, "Influence of traps on transient electric field and mobility evaluation in organic field-effect transistors", *Journal of Applied Physics* **107**, 043712/1 – 043712/7 (2010). (IF: 2.316)
  54. **Martin Weis**, Dai Taguchi, Takaaki Manaka and Mitsumasa Iwamoto, "Organic electronics: relaxation time controlled devices", *Japanese Journal of Applied Physics* **49**, 04DK15/1 – 04DK15/5 (2010). (IF: 1.247)
  55. Wei Ou-Yang, **Martin Weis**, Takaaki Manaka and Mitsumasa Iwamoto, "Tuning of threshold voltage in organic field-effect transistor by dipole monolayer", *Japanese Journal of Applied Physics* **49**, 04DK04/1 – 04DK04/4 (2010). (IF: 1.247)
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  57. Ryo Miyazawa, Dai Taguchi, **Martin Weis**, Takaaki Manaka and Mitsumasa Iwamoto, "Study of injected carrier energetics in organic-field-effect-transistor by charge modulation spectroscopy", *Japanese Journal of Applied Physics* **49**, 04DK07/1 – 04DK07/3 (2010). (IF: 1.247)
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  60. Mohan V. Jacob, Katia Bazaka, **Martin Weis**, Dai Taguchi, Takaaki Manaka, Mitsumasa Iwamoto, "Fabrication and characterization of polyterpenol as an insulating layer and incorporated organic field effect transistor", *Thin Solid Films*, **518**, 6123 – 6129 (2010). (IF: 1.884)
  61. **Martin Weis**, Jack Lin, Dai Taguchi, Takaaki Manaka, Mitsumasa Iwamoto, "The charge transport in organic field-effect transistor as an interface charge propagation: the Maxwell-Wagner effect model and transmission line approximation", *Japanese Journal of Applied Physics*, **49**, 071603/1 – 071603/8 (2010). (IF: 1.247)
  62. Mitsumasa Iwamoto, Takaaki Manaka, **Martin Weis**, Dai Taguchi, "Probing and Modeling of Interfacial Carrier Motion in Organic Devices by Optical Second Harmonic Generation", *Journal of Vacuum Science and Technology B*, **28**(4), C5F12 – C5F16 (2010). (IF: 1.460)
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  65. **Martin Weis**, Jack Lin, Dai Taguchi, Takaaki Manaka, Mitsumasa Iwamoto, "Insight Into the Contact Resistance Problem by Direct Probing of the

- Potential Drop in Organic Field-Effect Transistors”, *Applied Physics Letters*, **97**, 263304 (2010). (IF: 4.096)
66. Dai Taguchi, Tatsunori Shino, Le Zhang, Jun Li, **Martin Weis**, Takaaki Manaka, Mitsumasa Iwamoto, “Direct Probing of Photovoltaic Effect Generated in Double-Layer Organic Solar Cell by Electric-Field-Induced Optical Second-Harmonic Generation”, *Applied Physics Express (APEX)*, **4**, 021602/1 – 021602/3 (2011). (IF: 2.223)
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71. **Martin Weis**, Katarína Gmucová, Vojtech Nádaždy, Eva Majková, Daniel Haško, Dai Taguchi, Takaaki Manaka, Mitsumasa Iwamoto, “Grain boundary effect on charge transport in pentacene thin films”, *Japanese Journal of Applied Physics*, **50**, 04DK03/1 – 04DK03/5 (2011). (IF: 1.247)
72. Dai Taguchi, Le Zhang, **Martin Weis**, Takaaki Manaka, Mitsumasa Iwamoto, “Direct Probing of Carrier Behavior in Electroluminescence IZO/□-NPD/Alq3/LiF/Al Diode by Time-Resolved Optical Second-Harmonic Generation”, *Japanese Journal of Applied Physics*, **50**, 04DK08/1 – 04DK08/5 (2011). (IF: 1.247)
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74. Wei Ou-Yang, **Martin Weis**, Takaaki Manaka, Mitsumasa Iwamoto, “Study of relaxation process of DPPC monolayers at air-water interface: effect of electrostatic energy”, *Journal of Chemical Physics*, **134**, 154709/1 – 154709/8 (2011). (IF: 3.166)
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#### 7.4 Publikované kapitoly vo vedeckých monografiách vydaných v zahraničných vydavateľstvách

1. **Martin Weis**, Takaaki Manaka, Mitsumasa Iwamoto, „Analysis of contact resistance and space-charge effects in organic field-effect transistors.“, *Nanoscale Interface for Electronics*, eds. M. Iwamoto, Y.-S. Kwon, T. Lee, (World Scientific Publishers, Singapur, 2010) pp. 9-26. (ISBN-13 978-981-4322-48-5; ISBN-10 981-4322-48-2)
2. **Martin Weis**, Mitsumasa Iwamoto, „Dielectric physics approach for improvement of organic-field effect transistors performance“, *Energy Efficiency and Renewable Energy through Nanotechnology*, ed. L. Zang, (Springer, Berlin, 2011) pp. 843-872. (DOI: 10.1007/978-0-85729-638-2\_24)
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4. Wei Ou-Yang, **Martin Weis**, „Phase transitions for two-dimensional thin films: An introduction“, *Advanced Materials in Applied Physics: Synthesis, Properties and Applications*, ed. Bin Chen, Wei Ou-Yang, Martin Weis (Transworld Research Network, Kerala, 2012), pp. 83-104. (ISBN: 978-81-7895-551-3).
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#### 7.5 Autor (editor) monografie

1. Bin Chen, Wei Ou-Yang, Martin Weis, *Advanced Materials in Applied Physics: Synthesis, Properties and Applications* (Transworld Research Network, Kerala, 2012). (AH: 7.4, ISBN: 978-81-7895-551-3).

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