



Tsvetanka Babeva, PhD, Associated professor

Deputy Director of Institute of Optical Materials and Technologies
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Education

PhD in Physics: Central Laboratory of Photoprocesses, Bulgarian Academy of Sciences, Sofia, Bulgaria (2003)

Master in Physics: Sofia State University, Faculty of Physics, Major “Applied Optics”, MSc; (1994)

Previous Positions

Research fellow, Central Laboratory of Photoprocesses, Bulgarian Academy of Sciences, Sofia, Bulgaria, (2009 – 2010)

Arnold F. Graves Postdoctoral fellow, Centre for Industrial and Engineering Optics, Dublin Institute of Technology, Dublin, Ireland, (2007 - 2009).

Research associate, Central Laboratory of Photoprocesses, Bulgarian Academy of Sciences, Sofia, Bulgaria, (1998 – 2007)

Physicist, Central Laboratory of Photoprocesses, Bulgarian Academy of Sciences, Sofia, Bulgaria, (1995 – 1998).

Research fields

Thin films optics, UV-VIS-NIR Spectroscopy, Multilayered systems, Optical coatings, Acrylamide-based photopolymers, Computer simulations, Bragg stacks, optical sensors, sol-gel, spin-coating.

Publications

54 research articles in international peer-reviewed journals with IF and SJR
19 conference proceedings (full length),
1 book chapter

Number of presentations

70 participations in international and national conferences with 1 invited talk,
16 oral and 61 poster presentationse

Research management

Head of department "Optical materials" – 2010 -2014
Coordinator of 5 projects and participant in 15

Supervision

4 students (bachelor, master, Eureka and Erasmus)
3 PhD students (one finishing and one started in July)

Experience in international projects

NATO – CLG
Bi-lateral programs with Czech Republic and France,
COST scientific program MP0604
Operational Programmes “Development of human resources” and
“Development of competitiveness of Bulgarian economy”

Selected recent publications

1. K. Lazarova, R. Georgiev, M. Vasileva, B. Georgieva, M. Spassova, N. Malinowski and **T. Babeva**, "One-dimensional PMMA-V₂O₅ photonic crystals used as color indicators of chloroform vapors", *Opt Quant Electron*, 48:310 (2016).
2. R. Georgiev, B. Georgieva, M. Vasileva, P. Ivanov and **T. Babeva**, "Optical properties of sol-gel Nb₂O₅ films with tunable porosity for sensing applications", *Advances in Condensed Matter Physics*, 2015, 403196, (2015).
3. K. Lazarova, B. Georgieva, M. Spassova and **T. Babeva**, "Preparation and characterization of mesoporous Nb₂O₅ films for sensing applications", *Journal of Physics: Conference series*, 558, 012042, (2014)
4. D. Cody, E. Mihaylova, L. O'Neill, **T. Babeva**, H. Awala, R. Retoux, S. Mintova, I. Naydenova, "Effect of zeolite nanoparticles on the optical properties of diacetone acrylamide-based photopolymer", *Optical materials*, 37, 181-187, (2014)
5. K. Lazarova, H. Awala, S. Thomas, M. Vasileva, S. Mintova and **T. Babeva**, "Vapor responsive one-dimensional photonic crystals from zeolite nanoparticles and metal oxide films for optical sensing", *Sensors*, 14, 12207-12218, (2014).
6. **T. Babeva**, H. Awala, M. Vasileva, J. El Fallah, K. Lazarova, Sebastien Thomas and S. Mintova, "Zeolite films as building blocks for antireflective coatings and vapor responsive Bragg stacks", *Dalton Trans.*, 43, 8868-8876, (2014),
7. K. Lazarova, M. Vasileva, G. Marinov and **T. Babeva**, "Optical characterization of sol-gel derived Nb₂O₅ thin films", *Optics & Laser Technology*, 58, 114–118, (2014).
8. **T. Babeva**, K. Lazarova, M. Vasileva, B. Gospodinov and J. Dikova, "Fabrication and characterization of high refractive index optical coatings by sol-gel method for photonic applications", *Bulgarian Chemical Communications*, Volume 45, Special Issue B, 28-32, (2013).
9. **T. Babeva**, H. Awala, M. Vasileva, J. El Fallah, K. Lazarova and S. Mintova, "Pure silica MFI zeolite films as antireflection coatings", *Bulgarian Chemical Communications*, Volume 45, Special Issue B, 18-22, (2013)
10. K. Lazarova, M. Vasileva, G. Marinov and **T. Babeva**, "Sol-gel derived Nb₂O₅ thin films for photonic applications", *Bulgarian Chemical Communications*, Volume 45, Special Issue B, 23-27, (2013).
11. J. Dikova, I. Vlaeva, **Tz. Babeva**, T. Yovcheva and S. Sainov, "Optical and holographic properties of nano-sized As₂S₃ films", *Optics and Lasers in Engineering*, 50, 838–843, (2012)
12. G. Marinov, J. Tasseva, R. Todorov, **T. Babeva**, "One dimensional Photonic Crystals Comprising Organic and Inorganic Polymers", *Comptes rendus de l'Academie bulgare des Sciences*, Vol 65, No7, pp.927-932, (2012).
13. **T. Babeva**, R. Todorov, B. Gospodinov, N. Malinowski, J. El Fallah and S. Mintova, "Nanosized MEL zeolite and GeSe₂ chalcogenide layers as functional building blocks of tunable Bragg stacks", *J. Mater. Chem.*, **22**, 18136-18138, (2012).
14. **T. Babeva**, G. Marinov, J. Tasseva, A. Lalova and R. Todorov, "One dimensional photonic crystals from As₂S₃ and PMMA films for photonic and sensor applications", *Journal of Physics: Conference series*, 398, 012025, (2012)

15. B. Gospodinov, J. Dikova, S. Mintova and **T. Babeva**, "Tunable Bragg stacks from sol-gel derived Ta₂O₅ and MEL zeolite films", *Journal of Physics: Conference series*, 398, 012026, (2012)
16. I. Naydenova, E. Leite, **T. Babeva**, N. Pandey, T. Baron, T. Yovcheva, S. Sainov, S. Martin, S. Mintova, V. Toal, "Optical properties of photopolymerisable nanocomposites containing nanosized molecular sieves", *Journal of Optics*, 13, 044019, (2011).
17. **T. Babeva**, I. Naydenova, D. Mackey, S. Martin, and Vincent Toal, "Two-way diffusion model for short-exposure holographic grating formation in acrylamide based photopolymer", *J. Opt. Soc. Am. B*, 27 (2), 197 -203, (2010).
18. E. Leite, **T. Babeva**, E.-P. Ng, V. Toal, S. Mintova, and I. Naydenova, "Optical Properties of Photopolymer Layers Doped with Aluminophosphate Nanocrystals", *Journal of Physical Chemistry C*, 114(39), 16767 – 16775, (2010)
19. **T. Babeva**, D. Mackey, I. Naydenova, S. Martin and V. Toal, "Study of the photoinduced surface relief modulation in photopolymers caused by illumination with a Gaussian beam of light", *Journal of Optics*, 12, 124011, (2010).
20. M. Mahmud, I. Naydenova, **T. Babeva**, R. Jallapuram, S. Martin and V. Toal, "Determination of threshold exposure and intensity for recording holograms in thick green-sensitive acrylamide-based photopolymer", *Applied Optics*, 49 (28), 5276-5283, (2010).
21. **T. Babeva**, D. Mackey, I. Naydenova, S. Martin, and V. Toal, "Surface Relief Profile of Photopolymerisable Systems in a Single Illuminated Spot", *AIP Conference Proceedings*, Vol. 1288, 43-46, (2010)