

PUBLISHED WORKS

BOOKS (4)

1. F. Rosei, *“La Strada Non Percorsa”*, Work of Fiction (Novel) in Italian, EAN: 9788845604003, ISBN: 8845604004, 288 pages, first published in 2000.

2. F. Rosei, T.W. Johnston, *“Survival Skills for Scientists”*, Imperial College Press (July 2006); Japanese version (2008).

Publisher’s description: This book provides young scientists, from physicists through to sociologists, the counsel and tools that are needed to be their own agents and planners, to survive and succeed, hopefully even thrive in science. Making a good career based on peer-reviewed science means navigating many stressful phases from graduate school through to permanent employment. Performing artists pay agents to help them in this effort. In effect, this book is designed to allow you to act as your own agent. You are counseled to analyze yourself deeply to know clearly what you want and whether you can live with it, how to make career choices and what you should then keep in mind, when to fight and when to yield. The unwritten rules of the “science game” are explained, including how to become published and known, the pitfalls of peer review and how to evade them, papers and posters, job interviews and getting your science funded. Interspersed with this are illustrative anecdotes and a fair amount of humor. While the book is aimed at young scientists, from graduate students and beyond, more senior scientists will benefit from seeing the world from the point of view of rising scientists and become aware of the preoccupations of people in a system which has changed much from when the present senior scientists were rather younger.

Selected reviews: *Materials Today* **10**(7–8), 53 (2007): “...the book offers a wealth of sound advice that will find applicability to the current choices, strategies, battles, and initiatives that face a scientist at any stage of his or her professional career... an exhaustive resource.”, *Science* **314**, 1245 (2006): “...thought provoking and packed with information...”. Additional reviews appeared in Choice, the Newsletter of the Society of General Physiology and Journal of Materials Education.

3. A. Korkin, F. Rosei (Eds.), *Nanoelectronics and Photonics: From Atoms to Materials, Devices, and Architectures*, Nanostructure Science and Technology (series), Springer Pg Technology & Engineering / Nanotechnology / Lasers & Photonics / Electronics – Microelectronics, first published Oct 1st, 2008 (Hard cover), 2nd Edition May 1st 2009 (paperback), 3rd Edition Feb 1st 2010 (paperback) ISBN – 978-1-44192-6xx-x

Publisher’s description: Nanoelectronics and Photonics provides a fundamental description of the core elements and problems of advanced and future information technology. The authoritative book collects a series of tutorial chapters from leaders in the field covering fundamental topics from materials to devices and system architecture, and bridges the fundamental laws of physics and chemistry of materials at the atomic scale with device and circuit design and performance requirements.

4. P. Grutter, W. Hofer, F. Rosei (Eds.), *Properties of Single Organic Molecules On Crystal Surfaces*, Imperial College Press – World Scientific (April 2006) – ISBN 978-1-86094-628-8

Publisher’s description: Within nanoscience, an emerging discipline is the study of the physics and chemistry of *single molecules*. Molecules may be considered as the ultimate building blocks, and are therefore interesting for the development of molecular devices and for surface functionalization. Thus, it is interesting to study their properties when adsorbed on a suitable substrate such as a solid or crystal surface, and also for their potential applications in nano- or molecular-electronics and nanosensing. Investigations have been made possible by the advent of high resolution surface imaging and characterization techniques, commonly referred to as Scanning Probe Microscopes. This book focuses on the fascinating properties of the single molecules, and the difference between single molecules and ensembles of molecules is emphasized. As the first book intended for graduate courses in the field, after each chapter, students should be able to answer the question: “*What physical or chemical*

properties do you learn from a single molecule in this particular context?” Contributed by experts across the disciplines, the book provides useful reference material for specialized practitioners in surface science, nanoscience and nanoelectronics.

BOOK CHAPTERS (10)

10. D. Benetti, **F. Rosei**, “The role of carbon allotrope-based charge transport layers in enhancing the performance of perovskite solar cells,” in *Halide Perovskites for Photonics*, edited by A. Vinattieri and G. Giorgi (AIP Publishing, Melville, New York, 2021), pp. 4-1–4-38.
9. J.M. MacLeod, **F. Rosei**, “Supporting the Development and Deployment of Sustainable Energy Technologies Through Targeted Scientific Training”, Ch. 20, pp. 231–233 in *Sustainable Access to Energy in the Global South*, edited by Silvia Hostettler, Ashok Gadgil and Eileen Hazboun, Springer (2015).
8. K.R. Moonosawmy, J.M. MacLeod, **F. Rosei**, “STM Characterization of Supramolecular Materials with Potential for Organic Electronics and Nanotechnology” in *Functional Supramolecular Architectures*, edited by Paolo Samori and Franco Cacialli. Vol. 1, pp. 457-490. Wiley-VCH Verlag GmbH & Co. KGaA, Weinheim (2011).
7. J.M. MacLeod, **F. Rosei**, “Directed Assembly of Nanostructures” in *Comprehensive Nanoscience and Technology*, edited by D. Andrews, G. Scholes and G. Wiedderrecht, Vol. 3, pp. 13-68. Elsevier, Amsterdam (2010).
6. C. Santato, F. Cicaira, **F. Rosei**, “Self-assembly of thiophene-based materials: a scanning tunneling microscopy perspective” in *Thiophene Based Materials for Electronics and Photonics*, Ed.s I.F. Perepichka and D.F. Perepichka, Wiley and Sons, 517–547 (2009).
5. C.V. Cojocar, F. Cicaira, **F. Rosei**, “Alternative Nanofabrication Approaches for Non-CMOS Applications” in *Nanofabrication: Fundamentals and Applications*, pp. 499-542, Ed. A.A. Tseng, World Scientific (2008).
4. J.A. Miwa, **F. Rosei**, “Molecular Self-Assembly: Fundamental Concepts and Applications” in *The MEMS Handbook 2nd Edition*, Ed. M. Gad El Hak, Taylor and Francis (2005).
3. **F. Rosei**, R. Rosei, “Scanning Tunnelling Microscopy Studies of Elementary Surface Processes”, in *Science, Technology and Education of Microscopy, An Overview*, Vol. I, pp. 24–33 (2003).
2. **F. Rosei**, “Scanning Probe Microscopy studies of Ge/Si surfaces”, in *Science, Technology and Education of Microscopy, An Overview*, Vol. I, pp. 84–92 (2003).
1. M. Schunack, **F. Rosei**, F. Besenbacher, “The Scanning Tunneling Microscope as a Unique Tool to Investigate the Interaction Between Complex Molecules and Metal Surfaces”, in *Science, Technology and Education of Microscopy, An Overview*, Vol. I, pp. 43–51 (2003).

PATENTS (4)

1) Luminescent solar concentrator using a metal-free emitter (INRS/UESTC)

PCT/CA2018/050176 Patent pending (filed 2018-02-16, published 2018-08-23, International Publication Number WO2018/148837 A1)

Inventors: Ma, Dongling; INRS; **Rosei, Federico**; INRS; Wang, Zhiming M.; University of Electronic Science and Technology of China (UESTC); Tong, Xin (PhD student); Jin, Lei (PhD); Zhao, Haiguang (postdoc); Zhou, Yufeng (PhD); Benetti, Daniele (PhD student);

2) Combined PN Junction and Bulk Photovoltaic Device (Granted)

Patent issued on 2014-12-09 US 8,907,205 B2 (filed in 2011-06-16, published in 2012-01-26)

Canadian patent application: CA 2,743,346 A1 (filed in 2011-06-16, published in 2011-12-18)

Inventors: Ruediger, Andreas; INRS; **Rosei Federico**; INRS; Nechache, Riad (postdoc);

3) Nanothermometer

PCT patent application: WO2016015146 A1 (filed in 2015-07-27, published in 2016-02-04)

US patent application: US2017/0248477 A1 (filed in 2017-01-26, published in 2017-08-31)

Canadian patent application: CA2955094 A1 (filed in 2017-01-13, identical to the PCT)

Patent issued on 2023-09-19

Inventors: **Federico Rosei**; INRS; Haiguang Zhao (postdoc); Alberto Vomiero (Researcher);

4) Thin film coating and method of fabrication thereof (Plasmionique) (Granted)

US patent application: US 15/840,407. (filed in 2017-12-13, published in 2019-06-13)

Inventors: MacLeod, Jennifer; INRS; Nechache, Riad; INRS; Pépin, Henri; INRS; **Rosei, Federico**; INRS; Nouar, Rafik; Plasmionique inc.; Sarkissian, Andranik; Plasmionique inc.; Benetti, Daniele (PhD student).

ESSAYS AND COMMENTARIES (4)

4. M. Chaker, **F. Rosei***, ‘Materials Research in Africa: Rising from the Falls’, *Nature Materials* **11**, 187 (2012).
3. **F. Rosei***, L. Vayssieres*, P. Mensah*, ‘Materials Science in the developing world: Challenges and perspectives for Africa’ *Advanced Materials* **20**, 4627–4640 (2008).
2. **F. Rosei**, ‘Reform Science? First, Reset the Economy’ (Correspondence), *Nature Materials* **5**, 757 (2006).
1. **F. Rosei**, ‘Favouritism in Physics?’ (Correspondence), *Nature* **416**, 123 (2002).

EDITORIALS (9)

9. **F. Rosei**, Peace and Sustainability: Let’s Materialize It, *EMRS Newsletter* **4**, 1–2, (2025) [ISSN: 2958-7751]
8. S.A. Claridge, J. Huang, S. Margadonna, R. Richardd, **F. Rosei**, The first year of RSC Applied Interfaces: a retrospective, *RSC Appl. Int.* **2**, 11–13 (2025).
7. S.A. Matlin*, **F. Rosei**, P. Lambin, L. Jin, Editorial, The role of the chemical sciences in ‘decarbonizing’ the conversion of energy and industrial and agricultural emissions, *RSC Sustainability* **2**, 3566–3569 (2024).
6. **F. Rosei**, Editorial, Introducing RSC Applied Interfaces, *RSC Appl. Int.* **1**, 6 (2024).
5. S.A. Matlin*, **F. Rosei**, P. Lambin, L. Jin, Editorial, The role of the chemical sciences in stewardship for sustainability, *RSC Sustainability* **1**, 1584–1587 (2023).
4. K.P. Loh, **F. Rosei**, Editorial, *Journal of Experimental Nanoscience* **3**, 95 (2008).
3. **F. Rosei**, Editorial, Special Issue: ‘Nano’ in Canada, *Int. J. Nanotech.*, vol. **5**, 897 (2008).
2. **F. Rosei**, Editorial, “Nanoelectronics and photonics: from atoms to materials, devices and system architecture”, F. Rosei and A. Korkin Ed.s, *Springer* ISBN: 978-0-387-76498-6 (2008).
1. P. Grütter, W.A. Hofer, **F. Rosei**, Editorial, “Properties of Single Molecules at Crystal Surfaces”, Imperial College Press – World Scientific (April 2006).

JOURNAL ARTICLES (521)¹

Citation metrics: H-index – 91, i-10 index – 422, Total Citations – 29,401 (Google Scholar Sept. 4th, 2025)

521. Y. Feng, K. Chao, K. Wu, S. Yuan, A. Khosla, R. Yang, **F. Rosei***, H. Zhang*, Plasmonic Photoelectric Detection Engineering: Basic Principle, Design Strategies and Challenges, *Rep. Prog. Phys.*, *in press* (2025).
520. P. Jafari, A.A. Sabbagh Alvani*, H. Sameie, **F. Rosei**, Dual-Layer Thin Film Coating for Solar Energy Harvesting, *Chem. Select*, *in press* (2025).
519. P. Jafari, A.A. Sabbagh Alvani*, H. Sameie, **F. Rosei**, Durable Highly-Hydrophobic Coating for Solar Panel with Benefits of Self-cleaning, Thermal Insulation and Increased Energy Harvesting, *J. Coat. Tech. and Res.*, *in press* (2025).
518. R. Yang, **F. Rosei**, High-entropy strategy boosts energy storage in ferroelectric polymers, *Smart Sys.*, *in press* (2025).
517. B.-Y. Hu, W.-Q. Zhang*, G.-J. Zhao, **F. Rosei***, X.-X. Zhang, J.-S. Zhao*, L.-J. Xu, Y. Chu*, Unveiling self-trapped exciton emission in lanthanide-doped Cs₂NaInCl₆ double perovskites for efficient white LEDs, *Rare Met.*, *in press* (2025).

¹ Students that I supervised are underlined, post-docs are marked by a †. The corresponding authors are indicated with an *.

516. I. Haddadou, P. Brisebois, C.M. Ouellet-Plamondon*, D. Benetti, **F. Rosei***, Fluorescent chitosan hydrogels based on biomass-derived carbon dots for toxic aromatic detection, *Adv. Sust. Syst.*, *in press* (2025).
515. S. Zhang, Q. Yang, Y. Yin, W. Zhang, Y. Cheng, Y. Ji, H. Yang, L. Zhang, W. Zhou, S. Li, J. Zhang, **F. Rosei**, Y. Zhang, Epitaxial NiO/Al_{0.5}Ga_{0.5}N Heterostructures for High-performance solar-Blind Ultraviolet self-powered photodetectors, *J. Mat. Chem. C* **13**, 11744–11755 (2025).
514. A.M. Mousavi, A.A. Sabbagh Alvani, R. Salimi, **F. Rosei**, A CuWO₄/Ti₃C₂ MXene Heterojunction with Enhanced Photoelectrochemical and Photocatalytic Performance, *New J. Chem.* **49**, 7936–7946 (2025).
513. **B. Almohammed**, D. Barba, E. Haddad, R. Nechache, **F. Rosei**, F. Vetrone, Luminescent Erbium-based Nanoparticles Synthesized by Pulsed Laser Ablation in Liquid, *J. Phys. Chem. C* **129**, 8171–8181 (2025).
512. K. Wang, Y. Tao, Z. Tang, H. Zhao, X. Sun, **F. Rosei***, D. Liu, Y. Xiong, Stability of Photoelectrochemical Cells Based on Colloidal Quantum Dots, *Chem. Soc. Rev.* **54**, 3513–3534 (2025).
511. S. Hui, H. Zhang, G. Xu, J. Zhang, F. Xu, L. Sun, X. Lin, L. Ma, H. Peng, B. Li, E. Yan, **F. Rosei**, Hierarchically porous and flexible BN/Co-MOF aerogel encapsulated paraffin for efficient dual-thermal insulation, *J. Mat. Chem. A* **13**, 5882–5897 (2025).
510. **X. Pan**, Q. Wang*, L. Jin*, Y. Ni, **F. Rosei***, Integrated Paper-Hydrogel Structure for Spontaneous and Ultra-Durable Eco-Friendly Electricity Generation, *Nano Energy* **136**, 110730 (2025).
509. Y. Zhang*, X. Zhao, L. Jin, W. Xu, X. Shao, Y. Liu, Y. Chen, **F. Rosei***, Gold nanoparticles-wood nanohybrid as peroxidase-like for simple and selective detection of mercury ion, *Spect. Acta A* **332**, 125804 (2025).
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507. R. Cheng, Z. Liu, P. Manasa, Z. Zhao, H. Pan, F. Xu, L. Sun*, **F. Rosei**, Nanoflower-engineered Co₃O₄@CoNi-LDO bimetallic oxide: A catalyst for revolutionizing hydrogen storage in LiAlH₄, *Int. J. Hyd. En.* **102**, 375–385 (2025).
506. S.-H. Kang, P. Ghamari,[†] C. Ruchlin, Y. Che, Z. He, **F. Rosei**, D.F. Perepichka*, Rigid fluorescent Indacenetetraone-Based Semiconducting Polymers via Knoevenagel Condensation, *Adv. Func. Mat.* **35**, 2423731 (2025).
505. Y. Liu, L. Wu, Y. Wang, L.-W. Shen, G. Tian, L. Cui, L. Qin, L. Zhou, Y. Zhang, **F. Rosei**, X.-Y. Yang*, Surface S-Doped Nanostructured RuO₂ and Its Anion Passivating Effect for Efficient Overall Seawater Splitting, *ACS Nano* **19**, 2715–2725 (2025).
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501. L. Jin*, E. Hamzehpoor, G.S. Selopal, J. Liu, P. Kumar, D. Benetti, X. Tong, D.F. Perepichka*, Z.M. Wang*, **F. Rosei***, Harnessing the synergetic effects of Ag, Mn dopants in eco-friendly ultraviolet selective quantum dots for luminescent solar concentrators, *Small Meth.* **9**, 2301695 (2024).
500. Y.-H. Liu, P. Ghamari[†], M. Wei, C. Ruchlin, D. Cui, **F. Rosei**, D.F. Perepichka, Tetracyanoanthracenediacenaphthalimides as n-Type Organic Semiconductors: Control of Molecular Orientation, *Chem. Mat.* **36**, 11618–11627 (2024).

499. A. Baqaei, A.A. Sabbagh Alvani, H. Sameie, **F. Rosei**, TiO_{2-x}/Ag/rGO composites as effective photocatalysts for degradation of organic pollutants, *New J. Chem.* **48**, 18558–18568 (2024).
498. D. Zhong, X. Jia, X. Zhang, J. Zhao, D. Wang*, Y. Fang*, Z. Zhang, **F. Rosei***, Y. Li*, Optimization of g-C₃N₄ Nanostructures by CH₂ Introduction and Relay Modification for Photocatalytic Hydrogen Evolution, *ACS Appl. Nanomat.* **7**, 27508–27519 (2024).
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495. L. Shi, D. Benetti*, F. Li, C. Harnagea, Q. Wei*, **F. Rosei***, Boosting Solar Hydrogen Production with Polarized MOF-Derived Ferroelectric In₂Se₃/In₂O₃ Nanohybrids, *J. Mat. Chem. A* **12**, 29989–29997 (2024).
494. F. Navarro-Pardo, G.S. Selopal, A.P. Hernandez-Gonzalez, E. Ghasemy, J. Liu, K.K. Ghuman, A.C. Tavares, Z.M. Wang, **F. Rosei**, Nickel oxide/Nickel Nanohybrids for Oxygen and Hydrogen Evolution in Alkaline Media, *Electroch. Acta* **506**, 145002 (2024).
493. D. Dettmann, M. Panighel, N.P. Genesh, G. Galeotti, O. MacLean, M. Farnesi Camellone, T.K. Johal, S. Fabris, C. Africh, D.F. Perepichka*, **F. Rosei***, G. Contini*, Real-time imaging of on-surface Ullmann polymerization reveals an inhibiting effect of adatoms, *J. Am. Chem. Soc.* **146**, 24493–24502 (2024).
492. S. Kokilavani, G.S. Selopal*, L. Jin†, P. Kumar, D. Barba, **F. Rosei***, Dual aliovalent dopants Cu, Mn engineered eco-friendly QDs for ultra-stable anti-counterfeiting, *Chem. Eur. J.* **30**, e202402026 (2024).
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490. M. Yang, Q. Jing, J. Zhang, J.J. Teh, Y. Chen*, W. Zhou, B. Hu, X. Lin, H.K. Lee*, **F. Rosei***, L.-N. Wang*, Enhancing control over organic cathodes through metal coordination for efficient lithium/sodium ion batteries, *Nano Energy* **129**, 110005 (2024).
489. N.P. Genesh, D. Dettmann, D. Cui, Y. Che, V. Toader, T.K. Johal, C. Fu,* D.F. Perepichka,* **F. Rosei***, Effect of Aromatic Substituents in H-Bonded Assembly of Diketopyrrolopyrroles at Solid-Liquid Interfaces, *Nanoscale* **16**, 14477–14489, (2024).
488. L. Jin*†, G.S. Selopal, X. Liu, D. Benetti, **F. Rosei***, Perovskite Nanocrystals: opportunities in luminescent solar concentrators, *Adv. Func. Mat.* **34**, 2405653 (2024).
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485. H. Hammami*, D. Benetti, **F. Rosei**, M. Ben Rabeh, M. Kanzari, Synthesis of Stannite Cu₂CoSnS₄ and its use as photocatalyst for degradation of pollutants, *Inorg. Chem. Comm.* **165**, 112403 (2024).
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482. Y. Huang, Y. Li, D. Zhang, Y. Mai, H. Niemantsverdriet, F. Besenbacher, C. Dong, **F. Rosei**, Y. Yang, Y. Li, W. Liang, R. Su*, Light-Switchable N-Alkylation Using Amine-Functionalized MOF, *Appl. Cat. B* **350**, 123924 (2024).

481. M. Wang, A. Skripka, Y. Zhang, T. Cheng, M. Ng, S.Y. Wong, Y. Zhao, X. Sun, X. Li, K. Bhakoo, A. Chang, **F. Rosei**, F. Vetrone*, Theranostic Nanocapsules: Heating, Imaging, and Luminescence Nanothermometry, *Chem. Mat.* **36**, 3285–3295 (2024).
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468. N. Xu, Q. Cheng, M. Wang, Y. He, H. Ji, **F. Rosei**, Triggering synergistic electronic promoting effect through oxygen doping to promote electrochemical nitrogen reduction on metal-free electrocatalyst, *Inorg. Chem. Front.* **10**, 7010 (2023).
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