

## **Ismael Ràfols, publications with links to open access**

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### **Journal articles (Social sciences)**

#### ***Selected publications***

1. Hicks, D., Wouters, P., Waltman, L., de Rijcke, S., & Rafols, I. (2015). [The Leiden Manifesto for Research Metrics](#). *Nature*, 520, 429–431.
2. Rafols, I., Hopkins, M.M., Hoekman, J., Siepel, J., O'Hare, A., Perianes-Rodríguez, A., Nightingale, P. (2014) [Big Pharma, Little Science? A bibliometric perspective on big pharma's R&D decline](#). *Technological Forecasting & Social Change*, 81, 22–38. **Nominated to Best Paper Award in 2012 DRUID Conference.**
3. Rafols, I., Leydesdorff, L., O'Hare, A., Nightingale, P. and Stirling, A. (2012) [How journal rankings can suppress interdisciplinarity. The case of innovation studies in business and management](#). *Research Policy*, 41(7), 1262–1282. **Postprint. William Page Best Paper Award in the 2011 Atlanta Science and Innovation Conference.** See comment in Paul Wouter's [blog](#).
4. Rafols, I., Porter, A.L. and Leydesdorff, L. (2010) [Science overlay maps: A new tool for research policy and library management](#). *Journal of the American Society for Information Science and Technology* 61(9), 871–1887.
5. Rafols, I. and Meyer, M. (2010) [Diversity and Network Coherence as indicators of interdisciplinarity: case studies in bionanoscience](#). *Scientometrics*, 82(2), 263-287.

#### ***Research Portfolios***

6. Wallace, M.L., Rafols, I., 2015. [Shaping the agenda of a grand challenge: Institutional mediation of priorities in avian influenza research](#). *Submitted*.
7. Wallace, M.L., Rafols, I., 2015. [Research portfolios in science policy: moving from financial returns to societal benefits](#). *Minerva*, 53(2), 89-115. doi: 10.1007/s11024-015-9271-8
8. Chavarro, Diego, Puay Tang, and Ismael Rafols (2014). [The Relationship between Interdisciplinary Research and Local Knowledge: The Case of Colombia](#). *Research Evaluation*, 23 (3), 195-209. doi:10.1093/reseval/rvu012
9. Molas-Gallart, J., Rafols, I., D'Este, P., Llopis, O., 2015. Towards an alternative framework for the evaluation of translational research initiatives. *Research Evaluation* (in press). doi: 10.1093/reseval/rvv027
10. Molas-Gallart, J., Rafols, I., Tang, P. 2014. [The relationship between interdisciplinarity and societal impact](#). *Journal of Science Policy and Research Management*, 29(2), 69-89.

#### ***Science and technology dynamics***

11. Ciarli, T., Coad, A., & Rafols, I. (2015, in press). [Quantitative Analysis of Technology Futures. Techniques, Contexts, and Organizations](#). *Science and Public Policy*. doi: 10.1093/scipol/scv059
12. Leydesdorff, L. and Rafols, I. (2011) [The Local Emergence and Global Diffusion of Research Technologies: An Exploration of Patterns of Network Formation](#). *Journal of the American Society for Information Science and Technology*, 62(5), 846–860.
13. Rafols, I. (2007) [Strategies for knowledge acquisition in bionanotechnology: why are interdisciplinary practices less widespread than expected?](#) *Innovation; The European Journal of Social Sciences*, 20(4), 395-412.
14. Rafols, I. and Meyer, M. (2007) [How cross-disciplinary is bionanotechnology? Explorations in the specialty of molecular motors](#). *Scientometrics* 70(3), 633-650.

#### ***Global and overlay maps of science***

15. Daniele Rotolo, Ismael Rafols, Michael Hopkins, Loet Leydesdorff (2015, In Press). [Scientometric mapping as a strategic intelligence tool for the governance of emerging technologies](#). *Journal of the American Society for Information Science and Technology*. DOI: 10.1002/asi.23622.

16. Kay, L., Newman, N., Youtie, J., Porter, A.L., Rafols, I., (2014) [Patent Overlay Mapping: Visualizing Technological Distance](#). *Journal of the American Society for Information Science and Technology*. 65 (12), 2432-2443. DOI: 10.1002/asi.23146.
17. Leydesdorff, L., Kushnir, D., Rafols, I., (2014) [Interactive Overlay Maps for US Patent \(USPTO\) Data Based on International Patent Classifications \(IPC\)](#). *Scientometrics* 98 (3), 1583-1599. DOI 10.1007/s11192-012-0923-2
18. Leydesdorff, L., Chen, C., Rafols, I., (2013) [Interactive Overlays of Journals and the Measurement of Interdisciplinarity on the basis of Aggregated Journal-Journal Citations](#). *Journal of the American Society for Information Science and Technology*, 64(12), 2573-2586.
19. Leydesdorff, L., Carley, S., and Rafols, I. (2013) [Global Maps of Science based on the new Web-of-Science Categories](#). *Scientometrics* 94 (2), 589-593.
20. Leydesdorff L., Rotolo D., Rafols I. (2012) Interactive Overlay Maps of Medical Innovation using the Medical Subject Headings (MeSH) of PubMed. *Journal of the American Society for Information Science and Technology*, 63(11), 2239-2253.
21. Leydesdorff, L. and Rafols, I. (2012) [Interactive overlays: A new method for generating global journal maps from Web-of-Science data](#). *Journal of Informetrics*, 6, 318–332.
22. Kiss, I. Z., Broom, M., Craze, P. and Rafols, I. (2010) [Can epidemic models describe the diffusion of research topics across disciplines?](#) *Journal of Informetrics*. 4, 74-82.
23. Rafols, I. and Leydesdorff, L. (2009) [Content-based and Algorithmic Classifications of Journals: Perspectives on the Dynamics of Scientific Communication and Indexer Effects](#). *Journal of the American Society for Information Science and Technology*, 60(9), 1823-1835.
24. Leydesdorff, L. and Rafols, I. (2009) [A Global Map of Science Based on the ISI Subject Categories](#). *Journal of the American Society for Information Science and Technology*, 60(2), 348-362. **Identified as a Fast Breaking Paper by Thomson-Reuter's Essential Science Indicators. See interview in the webzine [ScienceWatch](#).**

#### ***Measures and mapping of interdisciplinary research***

25. Yegros-Yegros, A., Rafols, I. and D'Este, P. (2015) [Does interdisciplinary research lead to higher citation impact? The different effect of proximal and distal interdisciplinarity](#). *PLoS ONE* 10(8): e0135095. doi:10.1371/journal.pone.0135095
26. Liu, Y., Rafols, I. and Rousseau, R. (2012) A framework for knowledge integration and diffusion. *Journal of Documentation*, 68(1), 31-44.
27. Wagner, C.S., Roessner, J.D., Bobb, K., Klein, J.T., Boyack, K.W., Keyton, J., Rafols, I., Börner, K. (2011) [Approaches to Understanding and Measuring Interdisciplinary Scientific Research \(IDR\): A Review of the Literature](#). *Journal of Informetrics* 5(1), 14-26.
28. Leydesdorff, L. and Rafols, I (2011) [Indicators of interdisciplinarity of journals: Diversity, centrality, and citations](#). *Journal of Informetrics* 5(1), 87-100. [doi](#)
29. Porter, A.L. and Rafols, I. (2009) [Is Science Becoming more Interdisciplinary? Measuring and Mapping Six Research Fields over Time](#). *Scientometrics*, 81(3), 719-745.

#### ***Governance of nanomaterials***

30. Rafols, I, van Zwanenberg, P., Morgan, M., Nightingale, P., and Smith, A. (2011) [Missing links in nanomaterials governance: bringing industrial dynamics and downstream policies into view](#). *Journal of Technology Transfer*, 36(6), 624-639.
31. van Zwanenberg, P., Rafols, I., Morgan, M., Nightingale, P., and Smith, A. (2009) [How can regulation shape the direction of nanomaterials innovation?](#). *Notizie de Politeia*, 94, 150-160.

## **Book chapters**

1. Huutoniemi, Katri and Rafols, Ismael (2016) [Interdisciplinarity in Research Evaluation](#). "The Oxford Handbook of Interdisciplinarity", 2nd edition, Edited by Robert Frodeman, Oxford University Press.
2. Rafols, I., (2014) [Knowledge Integration and Diffusion: Measures and Mapping of Diversity and Coherence](#), in Ding, Y., Rousseau, R., and Dietmar, W. (Eds.), *Measuring Scholarly Impact: Methods and Practice*, Springer, 169-190. Doi 10.1007/978-3-319-10377-8\_8

## **Policy-oriented Reports (Social sciences)**

1. Martin, B., Nightingale, P., Rafols, I. (2014) [Response to the Call for Evidence to the Independent Review of the Role of Metrics in Research Assessment](#). Brighton, UK: SPRU.
2. Ciarli, T., Coad, A., & Rafols, I. (2013). [Quantitative Analysis of Technology Futures. Part 2: Conceptual framework for positioning FTA techniques in policy appraisal](#) (Nesta Working Paper No. 13/09). Brighton, UK: NESTA.
3. Rafols, I., and Costas, R. (2012) [Innogen's scientific impact and interdisciplinary scope](#). Innogen, University of Edinburgh, Edinburgh.
4. Alice O'Hare and Ismael Rafols (2011) A bibliometric analysis of QUEST publications. Annex 6D to Lyall's et al. report on "Identifying key success factors in the quest for interdisciplinary knowledge". The report (not the annex) is available at <http://www.innogen.ac.uk/downloads/QUEST-Interdisciplinarity-FINAL-report-310111.pdf>
5. Nightingale, P., Meyer, M., Morgan, M., Rafols, I., and van Zwanenberg, P. (2008). [Nanomaterials Innovation Systems: Their Structure, Dynamics and Regulation](#). Report for the Royal Commission on Environmental Pollution.
6. Meyer, M., Makar, I., Rafols, I., Olsen, D., Wagner, V., Zweck, A., Porter, A.L, Youtie, J. (2008). Euronano: Nanotechnology in Europe: assessment of the current state, opportunities, challenges and socio-economic impact. ETEPS.
7. Rafols, I. (2007) BioPolis - Inventory and analysis of national public policies that stimulate research in biotechnology, its exploitation and commercialisation by industry in Europe in the period 2002-2005. National reports of [France](#), [Ireland](#), [Italy](#) and [Hungary](#). See also [Final report](#) with collaborators from TNO (NL), ISI Fraunhofer (DE) and SPRU at [http://ec.europa.eu/research/biosociety/library/brochures\\_reports-biopolis\\_en.htm](http://ec.europa.eu/research/biosociety/library/brochures_reports-biopolis_en.htm)
8. von Tunzelmann, N., Rafols, I. , Patel, P. , Senker, J. (2005) The latest trends of life science and biotechnologies in Europe. A report to JETRO (Japanese External Trade Relations Organisation). SPRU, University of Sussex, Brighton, UK.