

Elisabeth Bouchaud's publications

I - Articles in peer-reviewed journals:

- I.1. E. Bouchaud, M. Daoud, Reflection of light by a random layered system, *J. de Physique (Paris)*, **47**, 1467, (1986)
- I.2. E. Bouchaud, M. Delsanti, A. Adam, M. Daoud, D. Durand, Gelation and percolation: swelling effect, *J. de Physique (Paris)*, **47**, 1273, (1986)
- I.3. E. Bouchaud, B. Farnoux, X. Sun, M. Daoud, G. Jannink, Tests for the determination of concentration profiles by neutron reflection, *Europhys. Lett.*, **2**, 315, (1986)
- I.4. M. Daoud, E. Bouchaud, G. Jannink, Swelling of polymer gels, *Macro-molecules*, **19**, 1955, (1986)
- I.5. E. Bouchaud, M. Daoud, Adsorbed polymers and node-avoiding Levy flights, *J. Phys. A: Math. Gen.*, **20**, 1463, (1987)
- I.6. E. Bouchaud, M. Daoud, Polymer adsorption : concentration effects, *J. de Physique (Paris)*, **48**, 1991 (1987)
- I.7. X. Sun, B. Farnoux, E. Bouchaud, A. Lapp, M. Daoud, G. Jannink, *Europhys. Lett.*, **6**, 207 (1988)
- I.8. E. Bouchaud, L. Auvray, J-P. Cotton, M. Daoud, B. Farnoux, G. Jannink, Application of scaling to the study of polymers at interfaces, *Progress in Surface Science*, **27**, 5, (1988)
- I.9. J-P. Bouchaud, E. Bouchaud, Comment on « Landau theory of the crumpling transition », *Phys. Rev. Letters*, **61**, 2625, (1988)
- I.10. S. Naka, H. Octor, E. Bouchaud, T. Khan, Reprecipitation observed in Y2 O3 dispersed titanium during heat treatment after cold rolling, *Scripta Metallurgica*, **23**, 501, (1989)
- I.11. E. Bouchaud, J-P. Bouchaud, Self-avoiding surfaces at interfaces, *J. de Physique France*, **50**, 829, (1989)
- I.12. E. Bouchaud, J. Vannimenus, Polymer adsorption: bounds for the crossover exponent and exact results for simple models, *J. de Physique France*, **50**, 2931, (1989)
- I.13. A. Johner, E. Bouchaud, M. Daoud, Stretching of polymer by an attractive wall , *J. de Physique France*, **50**, 495, (1990)
- I.14. E. Bouchaud, G. Lapasset, J. Planes, Fractal dimension of fractured surfaces : a universal value ?, *Europhysics Letters*, **13**, 73, (1990)
- I.15. E. Bouchaud, L. Kubin, H. Octor, Ductility and dynamic strain ageing of rapidly solidified aluminium alloys, *Met. Trans. ASME*, **22A**, 1021, (1990)
- I.16. J. Gill Sevillano, E. Bouchaud, L. Kubin, The fractal nature of gliding dislocation lines, *Scripta Met.*, **25**, 335, (1990)
- I.17. E. Bouchaud, J-P. Bouchaud, Long range stress field produced by a planar assembly of edge dislocations : the effect of disorder, *Phil. Mag. Lett.*, **65**, 339, (1992)
- I.18. E. Bouchaud, J-P. Bouchaud, S. Naka, G. Lapasset, H. Octor, Dissolution of precipitates by migrating grain boundaries, *Acta Metall. Mater*, **40**, 3451, (1992)
- I.19. G. Saada, E. Bouchaud, Dislocation walls, *Acta Metall.*, **41**, 2173, (1993)
- I.20. E. Bouchaud, G. Lapasset, J. Planes, S. Naveos, Statistics of branched fracture surfaces, *Phys. Rev. B*, **48**, 3451, (1993)
- I.21. J-P. Bouchaud, E. Bouchaud, G. Lapasset, J. Planes, Models of fractal cracks, *Phys. Rev. Lett.*, **71**, 2240, (1993)
- I.22. E. Bouchaud, J-P. Bouchaud, Fracture surfaces : apparent roughness, relevant length scales and fracture toughness, *Phys. Rev. B* **50**, 17752, (1994)
- I.23. E. Bouchaud, S. Naveos, From quasi-static to rapid fracture, *Journal de Physique (Paris)*, **15**, 547 (1995)
- I.24. G. Ananthakrishna, C. Fressengeas, M. Grosbras, J. Vergnol, C. Engelke, J. Plessing, H. Neuhauser, E. Bouchaud, J. Planes, L. Kubin, On the existence of chaos in jerky flow, *Scripta Metall. Mater*. **32**, 1731 (1995)

Elisabeth Bouchaud's publications

- I.25. P. Daguiet, E. Bouchaud, G. Lapasset, Roughness of a crack front pinned by microstructural obstacles, *Europhys. Lett.* **31**, 367 (1995)
- I.26. P. Daguiet, S. Henaux, E. Bouchaud, F. Creuzet, Quantitative analysis of a fracture surface by Atomic Force Microscopy, *Phys. Rev. E* **53**, 5637 (1996)
- I.27. P. Daguiet, E. Bouchaud, G. Lapasset, Model of crack propagation in heterogeneous materials: a local approach, *J. Phys. IV Paris*, **6**, C6-483 (1996)
- I.28. H. Octor, E. Bouchaud, G. Lapasset, Relationships between microstructure and mechanical properties of aluminium alloys, *La Recherche Aérospatiale*, **5-6**, 393 (1996)
- I.29. P. Daguiet, B. Nghiem, E. Bouchaud, F. Creuzet, Pinning and depinning of crack fronts in heterogeneous materials, *Phys. Rev. Lett.* **78**, 1062 (1997)
- I.30. E. Bouchaud, Scaling properties of cracks, *J. Phys. C : Condensed Matter* **9**, 4319 (1997) (1997)
- I.31. J.J.Ammann, E. Bouchaud, Characterization of self-affine surfaces from 3D digital reconstruction, *Europhys. J. Appl. Phys.* **4**, 133 (1998)
- I.32. E. Bouchaud, F. Paun, Fracture and damage at a microstructural scale, *Comp. Sci. Eng.* **1**, 32 (Sept.-Oct. 1999)
- I.33. S. Morel, J. Schmittbuhl, E. Bouchaud, G. Valentin, Scaling of crack surfaces and implications for fracture mechanics, *Phys. Rev. Lett.* **85**, 1678 (2000)
- I.34. E. Ducourthial, E. Bouchaud, J.-L. Chaboche, Influence of microcracks on a propagation of macrocrack, *Comp. Mater. Sci.* **19**, 229 (2000)
- I.35. S. Morel, E. Bouchaud, G. Valentin, Size effects in fracture: roughening of crack surfaces and asymptotic analysis, *Phys. Rev. B* **65**, 104101-1 (2002)
- I.36. S. Morel, E. Bouchaud, J. Schmittbuhl, G. Valentin, R-curve behavior and roughness development, *Int. J. of Fract.* **114**, 307 (2002)
- I.37. E. Bouchaud, J.-P. Bouchaud, D.S. Fisher, S. Ramanathan, J.R. Rice, Can crack front waves explain the roughness of cracks?, *J. of the Mech. and Phys. of Sol.* **50**, 1703 (2002)
- I.38. F. Paun, E. Bouchaud, Morphology of damage cavities in aluminium alloys, *Int. J. of Fract.*, **121**, 43-54 (2003).
- I.39. F. Célarié, S. Prades, D. Bonamy, L. Ferrero, E. Bouchaud, C. Guillot, C. Marlière, Glass breaks like metals, but at the nanometer scale, *Phys. Rev. Lett.* **90**, 075504-1 (2003)
- I.40. F. Célarié, S. Prades, D. Bonamy, L. Ferrero, A. Dickele, E. Bouchaud, C. Guillot, C. Marlière, Surface fracture of glassy materials as detected by real-time atomic force microscopy (AFM) experiments, *Appl. Surf. Lett.* **212-213**, 92-96 (2003)
- I.41. E. Bouchaud, The morphology of fracture surfaces, a tool to understand crack propagation in complex materials, *Surf. Review & Lett.* **10**, 797-814 (2003)
- I. 42. C. Marlière, S. Prades, F. Célarié, D. Dalmas, D. Bonamy, L. Ferrero, A. Dickele, C. Guillot, E. Bouchaud, Crack fronts and damage in glass at the nanometer scale, *J. Phys.: Condens. Matter* **15**, S2377-S2386 (2003)
- I. 43. S. Prades, D. Bonamy, D. Dalmas, E. Bouchaud, C. Guillot, Nano-ductile propagation in glasses under stress corrosion: spatio-temporal evolution of damage in the vicinity of the crack tip, *Int. J. of Solids & Structures* **42**, 637-645 (2005).
- I. 44. G. Mourot, S. Morel, E. Bouchaud, G. Valentin, Anomalous scaling of mortar fracture surfaces, *Phys. Rev. E* **71**, 016136 (2005).
- I. 45. A. Auradou, M. Zei, E. Bouchaud, Numerical study of the temperature and porosity effects on fracture propagation in a 2D network of elastic bonds, *Euro. Phys. J. B* **44**, 365-372 (2005).
- I.46. Z. Lu, K.-I. Nomura, A. Sharma, W. Wang, C. Zheng, A. Nakanao, R. Kalia, P. Vashishta, E. Bouchaud & C. Rountree, Dynamics of wing cracks and nanoscale damage in glass, *Phys. Rev. Lett.* **95**, 135501 (2005).
- I. 47. L. Ponson, D. Bonamy, E. Bouchaud, Two dimensional scaling properties of

Elisabeth Bouchaud's publications

- experimental fracture surfaces, *Phys. Rev. Lett.* **96**, 035506 (2006).
- I. 48. D. Bonamy, S. Prades, L. Ponson, D. Dalmas, C. Rountree, E. Bouchaud, C. Guillot, Experimental investigation of damage and fracture in glassy materials at the nanometre scale, *Int. J. of Mat. And Prod.* **26**, 339-353 (2006).
- I.49. D. Bonamy, L. Ponson, S. Prades, E. Bouchaud, C. Guillot, Scaling exponents for fracture surfaces in homogeneous glass and glassy ceramics, *Phys. Rev. Lett.* **97**, 135504 (2006).
- I.50. A. Marchenko, D. Fichou, D. Bonamy, E. Bouchaud, Observation of fracture events in mica crystal using scanning tunneling microscope, *Appl. Phys. Lett.* **89**, 093124 (2006).
- I.51. L. Ponson, D. Bonamy, H. Auradou, G. Mourot, S. Morel, E. Bouchaud, C. Guillot, J.-P. Hulin, Anisotropic self-affine properties of experimental fracture surfaces, *Int. J. of Fract.* **140**, 27 (2006).
- I.52. D. Bonamy, S. Prades, C.L. Rountree, L. Ponson, D. Dalmas, E. Bouchaud, K. Ravi-Chandar, C. Guillot, Nanoscale damage during fracture in silica glass, *Int. J. of Fract.* **140**, 3 (2006).
- I.53. G. Mourot, S. Morel, E. Bouchaud, G. Valentin, Scaling properties of mortar fracture surfaces, *Int. J. of Fract.* **140**, 39 (2006).
- I.54. C. L. Rountree, S. Prades, D. Bonamy, D. Dalmas, E. Bouchaud, R. Kalia, C. Guillot, A unified study of crack propagation in amorphous silica: Using experiments and simulations, *J. of Alloys and Compounds* **434**, 60-63 (2007)
- I.55. E. Bouchaud, D. Boivin, J.-L. Pouchou, D. Bonamy, B. Poon, G. Ravichandran, Fracture through cavitation in a metallic glass, *Europhysics Letters* **83**, 66006 (2008).
- I.56. S. Morel, D. Bonamy, L. Ponson, E. Bouchaud, Transient damage spreading and anomalous scaling in mortar crack surfaces, *Phys. Rev. E* **78**, 016112 , Part 2 (2008).
- I.57. C. L. Rountree, D. Vandembroucq, M. Talamali, E. Bouchaud and S. Roux, Plasticity-induced structural anisotropy of silica glass, *Phys. Rev. Lett.* **102**, 195501 (2009)
- I.58. Y. Hennequin, N. Pannacci, C. Pulido de Torres, G. Tetradis-Meris, S. Chapuliot, E. Bouchaud and P. Tabeling, Synthesizing Microcapsules with Controlled Geometrical and Mechanical Properties with Microfluidic Double Emulsion Technology, *Langmuir* **25**, 7857-7861 (2009).
- I. 59. F. Lechenault, G. Pallares, M. George, C. Rountree, E. Bouchaud and M. Ciccotti, Effects of Finite Probe Size on Self-Affine Roughness Measurements, *Phys. Rev. Lett.* **104**, 025502 (2010).
- I.60. D. Bonamy, E. Bouchaud, Failure of heterogeneous materials: a dynamic phase transition?, *Physics Reports* **498**, 1-44 (2011).
- I. 61. F. Lechenault, C. L. Rountree, F. Cousin, J.-P. Bouchaud, L. Ponson, E. Bouchaud, Evidence of deep water penetration into silica during stress corrosion fracture, *Phys. Rev. Lett.* **106**, 165504 (2011).
- I. 62. G. Pallares, C. L. Rountree, L. Douillard, F. Charra and E. Bouchaud, A luminous way to measure the velocity of dynamic cracks in glass, *Europhys. Lett.* **99**, 28003 (2012).
- I.63. B. Saintyves, O. Dauchot, E. Bouchaud, Bulk elastic fingering instability in Hele-Shaw cells, submitted to *Phys. Rev. Lett.* (2013).
- I. 64. F. Renard, T. Candela, E. Bouchaud, Constant dimensionality of fault roughness from the scale of microfractures to the scale of continents, *Geophys. Res. Lett.* **40**, doi: 10.1029/2012GL054143 (2013).
- I.65. J. S. Biggins, B. Saintyves, Z. Wei, E. Bouchaud, L. Mahadevan, Digital instability in a confined elastic film, *PNAS*, in press (2013).

Elisabeth Bouchaud's publications

I.66. Y. Cao, L. Ponson, E. Bouchaud, V. Tvergaard, A. Needleman, Variation of Ductile Fracture Surface Roughness with Material Properties, *Int. J. of Fract.*, in press (2013).

I.67. L. Ponson, A. Srivastava, S. Osovski, E. Bouchaud, V. Tvergaard, A. Needleman, Correlating toughness and roughness in ductile fracture, submitted to *Phys. Rev. Lett.* (2013).

II - Articles in peer-reviewed proceedings:

II.1. E. Bouchaud, S. Naka, H. Octor, Interaction between precipitates and migrating grain boundaries, International Congress IIB on Interphase and Intergrain Boundaries (Paris, September 1989), Colloque de Physique, colloque C1, Supplement au n° 1, **51**, (1990)

II.2. E. Bouchaud, T. Khan, L. Kubin, H. Octor, Ductility and fracture toughness of rapidly solidified aluminium alloys, ASM congress : Advanced Aluminium and Magnesium Alloys, Amsterdam (Pays Bas), June 20-22 1990.

II. 3. E. Bouchaud, G. Saada, Elastic field associated to grain boundaries, Interphase and Intergranular Boundaries IIB 92 Congress, Salonica (Greece), June 21-28 1992.

II. 4. E. Bouchaud, H. Octor, T. Khan, Rapidly solidified alloys for aerospace applications, Advanced Materials, IRC Birmingham (Grande-Bretagne), 9-13 Septembre 1992, *Materials & Design* **14**, 29, (1993).

II. 5. E. Bouchaud, Complex microstructures analysis : fracture surfaces as an example, International Congress Dislocations 93, Aussois (France), March 31-April 9 1993, *Dislocations 93, Solid state phenomena* **35-36**, Ed. J. Rabier et al, Scitec Publications (1993).

II..6. E. Bouchaud, J-P. Bouchaud, G. Lapasset, J. Planes, The statistics of crack branching during fast crack propagation, International Congress Fractals 93, Budapest (Hongrie), August 30 - September 3 1993, *Fractals* **1**, 1051 (1993).

II. 7. J. Planes, E. Bouchaud, G. Lapasset, Statistics of fracture surfaces, International Congress Fractals 93, Budapest (Hongrie), August 30 - September 3 1993, *Fractals* **1**, 1059 (1993).

II. 8. E. Bouchaud, MRS Fall Meeting, November 28-December 1 1994, Boston (U.S.A.), Fractal properties of fracture surfaces: roughness indices and relevant length scales, *MRS Symposium Proceedings* **367**, Ed. F. Family et al (1995).

II. 9. E. Bouchaud, IUTAM Symposium on Size-Scale effects in the Failure Mechanisms of Materials and Structures, October 3-7 1994, Torino (Italy), The roughness of fracture surfaces: relevant length scales and fracture toughness, Ed. A. Carpinteri, E & FN Spon (1995).

II. 10. P. Daguiet, E. Bouchaud, MRS Fall Meeting, November 29-December 2 1995, Boston (U.S.A.), Scaling properties of fracture surfaces, *MRS Symposium Proceedings* **409**, Ed. R.-L. Blumberg-Selinger et al (1996).

II. 11. P. Daguiet, E. Bouchaud, G. Lapasset, Euromech-Mecamat 96, 1st European Mechanics of Materials Conference on local approach to fracture, September 9-11 1996, Fontainebleau (France), Model of crack propagation in a heterogeneous Material: local approach, *Journal de Physique IV, Colloque* **C6**, Supplement au *Journal de Physique III*, n°10, Ed. A. Pineau and G. Rousselier (1996).

II. 12. P. Daguiet, B. Nghiem, E. Bouchaud, F. Creuzet, MRS Fall Meeting, December 2-5 1996, Boston (U.S.A.), Depinning of Fracture Fronts, *MRS Symposium Proceedings* **463**, Ed. D. Wirtz and T.-C. Halsey (1997)

II. 13. P. Daguiet, E. Bouchaud, G. Lapasset, MRS Fall Meeting, December 2-5 1996, Boston (U.S.A.), A model of crack propagation in a 2D heterogeneous material , *MRS Symposium Proceedings* **463**, Ed. D. Wirtz and T.-C. Halsey (1997)

II. 14. P. Daguiet, E. Bouchaud, International Conference on Computer-Aided Design of

Elisabeth Bouchaud's publications

- High-Temperature Materials, July 1997, Santa Fe (U.S.A.), Scaling Phenomena in Crack Propagation, Ed. A. Pechenik et al, Oxford University Press (1999).
- II. 15. M. Hinojosa, E. Bouchaud, B. Nghiem, MRS Fall Meeting, November 30-December 3 1998, Crack front interaction with microstructure in an aluminum alloy, MRS Symposium Proceedings **539**, Ed. L.Q. Chen et al (1999).
- II. 16. S. Morel, E. Bouchaud, G. Valentin, Size effects and R-curve in quasi-brittle fractures, Proceedings of the 16th European Conference on Fracture, ECF16 (2006).
- II. 17. S. Morel, D. Bonamy, L. Ponson, E. Bouchaud, Transient damage spreading and anomalous scaling in mortar crack surfaces, International Conference on Fracture ICF-12, Ottawa, Canada, July 13-18 (2009).
- II. 18 F. Lechenault, C.L. Rountree, F. Cousin, J.-P. Bouchaud, L. Ponson, E. Bouchaud, Damage of Silicate Glasses during Stress Corrosion, Continuum Models for Discrete Systems Symposia (CMDS-12), Journal of Physics : Conference series **319**, 012005 (2011).
- II. 19 A. Needleman, V. Tvergaard, E. Bouchaud, Prediction of Ductile Fracture Surface Roughness Scaling, Conference in Honour of Jim Rice, Caltech, USA, January (2011).
- II. 20 G. Pallares, F. Lechenault, M. George, E. Bouchaud, M. Ciccotti, Roughness of silica glass subcritical fracture surfaces, International Conference on the Fractography of Glasses and Ceramics (FGC VI), Jacksonville, Florida, USA, June 5-8 (2011).

III - Science popularization:

- III.1. E. Bouchaud, Les alliages métastables obtenus par refroidissement rapide, Enjeux (AFNOR), n° **95**, (December 1988)
- III.2. E. Bouchaud, L. de Arcangelis, G. Lapasset, J. Planes, Les fractales dans la rupture des matériaux, La Recherche, **22**, 808, (1991)
- III.3. M. Hinojosa, E. Bouchaud, B. Nghiem, Rugosidad a larga distancia en superficies de fractura de materiales heterogeneos, Ingenierias **Vol. III**, number 7, 16, (April-June 2000)
- III. 4. Physical Review FOCUS, Breaking glass under a microscope, March 5, 2003.
- III. 5. La Recherche, Les nanocassures du verre, numero 364, May 2003.
- III. 6. Pour la Science, Le comportement métallique du verre, numero 308, June 2003.
- III. 7. D. Bonamy, E. Bouchaud, La rupture du verre au travers d'un microscope, Reflets de la Physique n°2, 2007.

IV - Patent:

Laurent Ponson, Daniel Bonamy, Elisabeth Bouchaud, **Procedure of determination of the crack path from a fracture surface**, brevet 511058 (2005).

V - Miscellaneous:

Experimental conference Espace des Sciences Pierre-Gilles de Gennes ESPCI, Paris, France, december 2012

http://www.canal-u.tv/video/espci_paristech/dessine_moi_un_atome.11339

Experimental conference Palais de la Découverte, Paris, France, april 2013

<http://www.palais-decouverte.fr/index.php?id=2312>

Radio broadcast

<http://www.franceinter.fr/emission-la-tete-au-carre-le-comportement-des-materiaux>

Theater

<http://www.elisabeth-bouchaud-theatre.fr>