CSIRO Energy
ARRC - CSIRO - 26 Dick Perry Avenue - Perth, WA 6151, Australia

joel.sarout@csiro.au
Phone: +61 8 64 36 87 70

Joel Sarout, PhD Earth Science (Rock Physics)

Education

2003 – 2006 **Ecole Normale Supérieure / Université Paris XI**
Doctor of Philosophy, Earth Science (Rock Physics)
Paris, France

2001 – 2003 **University of Minnesota**
Master of Science, Civil Engineering (Geomechanics)
Minneapolis, USA

Research Experience

2014 – present **Research Team Leader - Rock Properties**
CSIRO, Energy
Perth, Western Australia, Australia

2011 – 2014 **Research Group Leader - Rock Properties**
CSIRO, Division of Earth Science and Resource Engineering
Perth, Western Australia, Australia

2008 – 2011 **Research Scientist - Rock Physics**
CSIRO, Division of Earth Science and Resource Engineering
Perth, Western Australia, Australia

2006 – 2008 **Postdoctoral Fellow and Teaching Assistantship**
Laboratoire de Géologie, Ecole Normale Supérieure / CNRS
Paris, France

2003 – 2006 **PhD Research and Teaching Assistantship**
Laboratoire de Géologie, Ecole Normale Supérieure / CNRS
Paris, France

2006 – 2008 **MSc Research and Teaching Assistantship**
Department of Civil Engineering, University of Minnesota
Minneapolis, USA

Theses

PhD Thesis: *Propriétés Physiques et Anisotropie des Roches Argileuses : Modélisation Micromécanique et Expériences Triaxiales (in French). Physical Properties and Anisotropy of Shales: Micromechanical Modelling and Triaxial Experiments*. 10/2006, Ecole Normale Supérieure / Université Paris XI, DOI: 10.13140/RG.2.1.2266.7680. Supervisor: prof Yves Guéguen.

MSc Thesis: *Experimental Identification of Chemoporoelastic Parameters for Reactive Shales*. 05/2003, Degree: MSc - University of Minnesota, DOI: 10.13140/RG.2.1.3315.3444. Supervisor: prof Emmanuel Detournay.

International reputation

- Regular reviewer for: Geophysics, Journal of Geophysical research-Solid Earth, Geophysical Prospecting, Geotechnical Testing Journal, International Journal of Rock Mechanics and Mining Sciences, Journal of Petroleum Science and Engineering, Journal of Applied Geophysics, Pure and Applied Geophysics, Rock Mechanics and Rock Engineering, Geophysical Journal International, Journal of Material Engineering Performance, Journal of Engineering Mechanics.
- Reviewer for the Australian Research Council.
- Reviewer for the US National Science Fundation.
- Reviewer for the Czech Science Fundation.
- 2015: Session chair (with Dr Colin Sayers, Schlumberger, USA) at the 3rd International Workshop on Rock Physics held in Perth, Australia.
- 2015: Invited member of the PhD defense committee of Lucas Pimienta's at the Ecole Normale Supérieure, Paris.
- 2015: Co-organiser of the 3rd International Workshop on Rock Physics to be held in Perth, Australia.
- 2013: Assessor of a PhD thesis at Curtin University, Dpt. of Petroleum Engineering, Dr Amin Nabipour, supervised by prof. Brian Evans.
- 2013: Session chair (with Dr Erling Fjaer, SINTEF Petroleum Research, Norway) at the 2nd International Workshop on Rock Physics held in Southampton, UK.
- 2012: Personally invited by Dr Luca Duranti at Chevron California to apply for a position of senior rock physicist in gas shale and carbonate rock research he was opening in San Ramon, USA (declined).
- 2011: Session chair (with Dr Colin Sayers, Schlumberger, USA) at the 1st International Workshop on Rock Physics held in Denver, Colorado, USA.
- 2011: Patent technical assessor for Curtin University, Department of Exploration Geophysics, Rock Physics Team.
- 2011: Invited as a visiting Associate Professor at the University of Cergy-Pontoise (France).
- 2010: Session chair (with Dr Jerome Fortin, CNRS, France) at the 8th Euroconference of Rock Physics and Geomechanics held in Ascona, Switzerland.

Languages

French	Mother tongue
English	Full professional proficiency
Arabic	Elementary proficiency
Spanish	Elementary proficiency

Google Scholar citation indices (as of September 2015)

	All	**Since 2010**
Citations	403	359
h-index	10	10
i10-index	12	10

Refereed journal articles

Reference	Year	5y-JIF
D.N. Dewhurst, **J. Sarout**, C. Delle Piane, A.F. Siggins, M.D. Raven. *Empirical strength rediction for preserved shales*. Marine and Petroleum Geology, **67**, 512-525. DOI:10.1016/j.marpetgeo.2015.06.004	2015	2.957
C. David, J. Dautriat, **J. Sarout**, C. Delle Piane, B. Menendez, R. Macault., D. Bertaud. *Mechanical instability induced by water weakening in laboratory fluid injection tests*. Journal of Geophysical Research-Solid Earth, **120**, 4171-4188. DOI:10.1002/2015JB011894	2015	3.712
C. David, D. Bertaud, J. Dautriat, **J. Sarout**, B. Menendez, B. Nabawy. *Detection of moving capillary front in porous rocks using X-ray and ultrasonic methods*. Frontiers in Physics, **3**, 53. DOI:10.3389/fphy.2015.00053	2015	1.872
J. Sarout, C. Delle Piane, D. Nadri, L. Esteban, D.N. Dewhurst. *A robust experimental determination of Thomsen's δ parameter*. Geophysics, **80**, A19-A24. DOI:10.1190/GEO2014-0391.1	2015	2.046
L. Esteban, L. Pimienta, **J. Sarout**, C. Delle Piane, S. Haffen, Y. Geraud, N. E Timms. *Study cases of thermal conductivity prediction from P-wave velocity and porosity*. Geothermics, **53**, 255-269. DOI:10.1016/j.geothermics.2014.06.003	2015	2.606
B.D. Smerdon, L.A. Smith, G.A. Harrington, W. Payton, C. Delle Piane, **J. Sarout**. Estimating the hydraulic properties of an aquitard from in situ pore pressure measurements. Hydrogeology Journal, 22, 1875-1887. DOI:10.1007/s10040-014-1161-x	2014	2.078
J. Sarout, L. Esteban, C. Delle Piane, B. Maney, D.N. Dewhurst. Elastic anisotropy of Opalinus Clay under variable saturation and triaxial stress. Geophysical Journal International, **198**, 1662-1682. DOI:10.1093/gji/ggu231	2014	2.922
A.P. Bunger, **J. Sarout**, J. Kear, C. Delle Piane, E. Detournay, M. Josh, D.N. Dewhurst. *Experimental Chemoporoelastic Characterization of Shale Using Millimeter-Scale Specimens*. Journal of Petroleum Science and Engineering, **118**, 40-51. DOI:10.1016/j.petrol.2014.04.004	2014	1.342
C. Delle Piane, **J. Sarout**, C. Madonna, E.H. Saenger, D.N. Dewhurst, M. Raven. *Frequency-dependent seismic attenuation in shales: experimental results and theoretical analysis*. Geophysical Journal International, **198**, 504-515. DOI:10.1093/gji/ggu148	2014	2.922
A. Arena, C. Delle Piane, **J. Sarout**. *A new computational approach to cracks quantification from 2D image analysis: Application to micro-cracks description in rocks*. Computers & Geosciences, **66**, 106-120. DOI:10.1016/j.cageo.2014.01.007	2014	1.952
L. Pimienta, **J. Sarout**, L. Esteban, C. Delle Piane. *Prediction of rocks thermal conductivity from elastic wave velocities, mineralogy and microstructure*. Geophysical Journal International, **197**, 860-874. DOI:10.1093/gji/ggu034	2014	2.922
Y. Le Gonidec, **J. Sarout**, J. Wassermann, C. Nussbaum. *Damage initiation and propagation assessed from stress-induced microseismic events during a mine-by test in the Opalinus Clay*. Geophysical Journal International, **198**, 126-139. DOI:10.1093/gji/ggu122	2014	2.922
D. Nadri, **J. Sarout**, A. Bóna, D.N. Dewhurst. *Estimation of the anisotropy parameters of transversely isotropic shales with a tilted symmetry axis*. Geophysical Journal International, **190**, 1197-1203. DOI:10.1111/j.1365-246X.2012.05545.x	2012	2.922
M. Josh, L. Esteban, C. Delle Piane, **J. Sarout**, D. N. Dewhurst, M. B. Clennell. *Laboratory characterisation of shale properties*. Journal of Petroleum Science and Engineering, **88–89**, 107–124. DOI:10.1016/j.petrol.2012.01.023	2012	1.342

Y. Le Gonidec, A. Schubnel, J. Wassermann, D. Gibert, C. Nussbaum, B. Kergosien, **J. Sarout**, A. Maineult, Y. Guéguen. *Field-scale acoustic investigation of a damaged anisotropic shale during a gallery excavation*. International Journal of Rock Mechanics and Mining Sciences, **51**, 136-148. DOI:10.1016/j.ijrmms.2012.01.018	2012	1.958
J. Sarout. *Impact of pore space topology on permeability, cut-off frequencies and validity of wave propagation theories*. Geophysical Journal International, **189**, 481 - 492. DOI:10.1111/j.1365-246X.2011.05329.x	2012	2.922
J. Sarout, E. Detournay. *Chemoporoelastic analysis and experimental validation of the pore pressure transmission test for reactive shales*. International Journal of Rock Mechanics and Mining Sciences, **48**, 759-772. DOI:10.1016/j.ijrmms.2011.04.009	2011	1.958
D.N. Dewhurst, A.F. Siggins, **J. Sarout**, M.D. Raven, H.M. Nordgård-Bolås. *Geomechanical and ultrasonic characterization of a Norwegian Sea shale*. Geophysics, **76**, WA101-WA111. DOI:10.1190/1.3569599	2011	2.046
Y. Guéguen, **J. Sarout**. *Characteristics of anisotropy and dispersion in cracked medium*. Tectonophysics, **503**,165-172. DOI:10.1016/j.tecto.2010.09.021	2011	3.325
N. Brantut, A. Schubnel, J. Corvisier, **J. Sarout**. *Thermochemical pressurization of faults during coseismic slip*. Journal of Geophysical Research-Solid Earth, **115**, B05314. DOI:10.1029/2009JB006533	2010	3.712
A. Ougier-Simonin, **J. Sarout**, Y. Guéguen. *A simplified model of effective elasticity for anisotropic shales*. Geophysics, **74**, D57-D63. DOI:10.1190/1.3096616	2009	2.046
J. Sarout, M. Ferjani, Y. Guéguen. *A semi-automatic processing technique for elastic-wave laboratory data*. Ultrasonics, **49**, 452-458. DOI:10.1016/j.ultras.2008.12.001	2009	1.948
Y. Guéguen, **J. Sarout**. *Crack-induced anisotropy in crustal rocks: Predicted dry and fluid-saturated Thomsen's parameters*. Physics of The Earth and Planetary Interiors, 172, 116-124. DOI:10.1016/j.pepi.2008.05.020	2009	2.744
Y. Guéguen, **J. Sarout**, J. Fortin, A. Schubnel: *Cracks in porous rocks : Tiny deffects, strong effects,*. The Leading Edge January 2009.	2009	N/A
J. Sarout, Y. Guéguen. *Anisotropy of elastic wave velocities in deformed shales: Part 1-Experimental results*. Geophysics, **73**, D75-D89. DOI:10.1190/1.2952744	2008	2.046
J. Sarout, Y. Guéguen. *Anisotropy of elastic wave velocities in deformed shales: Part 2-Experimental results*. Geophysics, **73**, D91-D103. DOI:10.1190/1.2952744	2008	2.046
J. Sarout, L. Molez, Y. Guéguen, N. Hoteit: *Shale dynamic properties and anisotropy under triaxial loading: Experimental and theoretical investigations*. Physics and Chemistry of the Earth, **32**, 896-906. DOI:10.1016/j.pce.2006.01.007	2007	1.489

Refereed conference articles

Reference	**Year**
G. Avijegon, **J. Sarout**. *A laboratory setup for the measurement of wellbore instability due to erosion of unconsolidated formations*. Australian Petroleum Production and Exploration Association Conference and Exhibition, Melbourne, Australia, 14pp	2015
Y. Le Gonidec, C. Nussbaum, **J. Sarout**, J. Wassermann, P. Bossart. *Microseismicity Induced in the Opalinus Clay by a Gallery Excavation in the Mont Terri Underground Rock Laboratory*. 49th American Rock Mechanics Association Annual Conference, San Francisco, USA, 7pp	2015
L. Pimienta, L. Esteban, **J. Sarout**, K. Liu, C. Delle Piane, B. Clennell. *Experimental Evidence of Calcite Dissolution and Induced Precipitation during supercritical CO2 Residence*. 76th EAGE Conference & Exhibition, Amsterdam, The Netherlands, 5pp	2014

D.N. Dewhurst, A. Bunger, M. Josh, **J. Sarout**, C. Delle Piane, L. Esteban, B. Clennell. *Mechanics, Physics, Chemistry and Shale Rock Properties*. 47th American Rock Mechanics Association Annual Conference, San Francisco, USA, 11pp	2013
J. Sarout, Y. Guéguen, E. David (2009). *Frequency effects and fluid pressure polarization in porous/cracked rocks*. Proceedings of the 4th Biot Conference on Poromechanics. Columbia Univ., New York, June 2009, USA. Poro-mechanics IV, pp. 417-422. Eds. H. I. Ling, A. Smyth and R. Betti. DEStech Publications.	2009
Y. Guéguen, **J. Sarout** (2009). *Poroelasticity and effective elasticity in porous and cracked rocks*. Proceedings of the 4th Biot Conference on Poromechanics. Columbia Univ., New York, June 2009, USA. Poro-mechanics IV, pp. 405-410. Eds. H. I. Ling, A. Smyth and R. Betti. DEStech Publications.	2009
J. Sarout, L. Molez, Y. Guéguen, N. Hoteit (2005). *Shale dynamic properties and anisotropy under triaxial loading*. Proceedings of the 3rd Biot Conference on Poro-mechanics. University of Oklahoma, Norman, USA.	2005
E. Detournay, **J. Sarout**, C. Tan, J. Caurel (2005). *Chemoporoelastic parameters identification of reactive shales*. In IUTAM Symposium on the Mechanics of Physicochemical and Electrochemical Interactions in Porous Media. Kerkrade, May 2003, The Netherlands. Solid Mechanics and its Applications, Vol. 125, pp. 125-132. Eds. J. M. Huyghe, P. A. C. Raats and S. C. Cowin. Springer.	2003