

Scientific Publications of Michele Griffa

Last update: June 30th 2017

In **red**, PhD student authors/co-authors at the time of the publication.

Papers in SCI(E) Journals

PUBLISHED

1. S. Josset, L. Hansen, **P. Orsolini**, **M. Griffa**, O. Kuzior, B. Weisse, T. Zimmermann, T. Geiger, *Microfibrillated cellulose foams obtained by a straightforward freeze-thawing-drying procedure*, Cellulose (June 2017). DOI: 10.1007/s10570-017-1377-8. [Abstract](#).
2. **B.W. Hailesilassie**, I. Jerjen, **M. Griffa**, M. Partl, *A closer scientific look at foam bitumen*, Road Mat. Pav. Design 18(2), 362-375 (2017). DOI: 10.1080/14680629.2016.1213513. [Abstract](#).
3. **T.D. Lämmlein**, **F. Messina**, **M. Griffa**, G.P. Terrasi, P. Lura, *Bond performance of sand coated UHM CFRP tendons in High Performance Concrete*, Polymers **9**(2), 78 (18 pages) (2017). DOI: 10.3390/polym9020078. [Abstract](#).
4. **C. Di Bella**, **M. Griffa**, T.J. Ulrich, P. Lura, *Early-age elastic properties of cement-based materials as a function of decreasing moisture content*, Cem. Concr. Res. **89**, 87-96 (2016). DOI: 10.1016/j.cemconres.2016.08.001. [Abstract](#).
5. **M.C. Cavalli**, **M. Griffa**, **S. Bressi**, M.N. Partl, G. Tebaldi, L. Poulikakos, *Multi-scale imaging and characterization of asphalt concrete with recycled asphalt*, J. of Microscopy **264**(1), 22-33 (2016). DOI: 10.1111/jmi.12412. [Abstract](#).
6. **F. Yang**, **M. Griffa**, A. Bonnin, R. Mokso, **C. Di Bella**, B. Münch, R. Kaufmann, P. Lura, *Visualization of water drying in porous materials by X-ray phase contrast imaging*, J. Microscopy **261**(1), 88-104 (2016). DOI: 10.1111/jmi.12319. [Abstract](#).
7. **B. Ferdowsi**, **M. Griffa**, R.A. Guyer, P.A. Johnson, C. Marone, J. Carmeliet, *Acoustically-induced slip in sheared granular layers: application to dynamic earthquake triggering*, Geophys. Res. Lett. **42**, 9750-9757 (2015). DOI: 10.1002/2015GL066096. [Abstract](#).
8. E. Franzoni, **G. Graziani**, E. Sassoni, G. Bacilieri, **M. Griffa**, P. Lura, *Solvent-based ethyl silicate for stone consolidation: influence of the application technique on penetration depth, efficacy and pore occlusion*, Mat. Struct. **48**, 3503-3515 (2015). DOI: 10.1617/s11527-014-0417-1. [Abstract](#).
9. **C. Di Bella**, M. Wyrzykowski, **M. Griffa**, P. Termkhajornkit, G. Chanvillard, H. Stang, A. Eberhardt, P. Lura, *Application of microstructurally-designed mortars for studying early-age properties: Microstructure and mechanical properties*, Cem. Concr. Res. **78**, 234-244 (2015). DOI: 10.1016/j.cemconres.2015.08.001. [Abstract](#).
10. **F. Yang**, **F. Prade**, **M. Griffa**, I. Jerjen, **C. Di Bella**, J. Herzen, **A. Sarapata**, F. Pfeiffer, P. Lura, *Dark-field X-ray imaging of unsaturated water transport in porous materials*,

- Appl. Phys. Lett. **105**, 154105 (2014). DOI: 10.1063/1.4898783. [Abstract](#).
11. **B. Ferdowski, M. Griffa**, R.A. Guyer, P.A. Johnson, C. Marone, J. Carmeliet, *Three-dimensional discrete element modeling of triggered slip in sheared granular media*, Phys. Rev. E **89**, 042204 (2014). DOI: 10.1103/PhysRevE.89.042204. [Abstract](#).
12. C. Payan, T.J. Ulrich, P-Y. Le Bas, **M. Griffa**, P. Schuetz, M.C. Remillieux, T.A. Saleh, *Probing material nonlinearity at various depths by the use of time reversal mirror and focal time delay analysis*, Appl. Phys. Lett. **104**, 144102 (2014). DOI: 10.1063/1.4871094.
13. P.A. Johnson, **B. Ferdowski, B. Kaproth, M. Scuderi, M. Griffa**, J. Carmeliet, R.A. Guyer, P-Y. Le Bas, D.T. Trugman, C. Marone, *Acoustic emission and microslip precursors to stick-slip failure in sheared granular media*, accepted for publication in Geophys. Res. Lett **40**, 5627-5631 (2013). DOI: 10.1002/2013GL057848. [Abstract](#). In the news: [Faults may emit earthquake warning signs](#).
14. **B. Ferdowski, M. Griffa**, R.A. Guyer, P.A. Johnson, C. Marone, J. Carmeliet, *Microslips as precursors of large slip events in the stick-slip dynamics of sheared granular layers: a discrete element model analysis*, Geophys. Res. Lett. **40**, 4194-4198 (2013). DOI: 10.1002/grl.50813. [Abstract](#).
15. **B. Ferdowski, M. Griffa**, R.A. Guyer, P.A. Johnson, J. Carmeliet, *Effect of boundary vibration on the frictional behavior of a dense sheared granular layer*, Acta Mech. **225**, 2227-2237 (2014). DOI: 10.1007/s00707-014-1136-y. Pre-print available at <http://arxiv.org/abs/1401.6308>. [Abstract](#).
16. **A. Patera**, D. Derome, **M. Griffa**, J. Carmeliet, *Hysteresis in swelling and sorption of wood tissue*, J. Struct. Biol. **182**, 226-234 (2013). DOI: 10.1016/j.jsb.2013.03.003.
17. **H. Derluyn, M. Griffa**, D. Mannes, I. Jerjen, **J. Dewanckele**, P. Vontobel, A. Sheppard, D. Derome, V. Cnudde, E. Lehmann, J. Carmeliet, *Characterizing saline uptake and salt profiles in porous limestone with neutron radiography and X-ray micro-tomography*, J. Build. Phys **36** (4), 353-374 (2013). DOI:10.1177/1744259112473947.
18. M. Scalerandi, **M. Griffa**, P. Antonaci, M. Wyrzykowski, P. Lura, *Nonlinear elastic response of thermally damaged consolidated granular media*, J. Appl. Phys. **113**, 154902 (2013). DOI: 10.1063:1.4801801.
19. **M. Griffa, B. Ferdowski**, R.A. Guyer, E.G. Daub, P.A. Johnson, C. Marone, J. Carmeliet, *Influence of vibration amplitude on dynamic triggering of slip in sheared granular layers*, Phys. Rev. E **87** (1), 012205 (2013). DOI: 10.1103/PhysRevE.87.012205. [Abstract](#).
20. **M. Griffa, B. Ferdowski**, E.G. Daub, R.A. Guyer, P.A. Johnson, C. Marone, J. Carmeliet, *Meso-mechanical analysis of deformation characteristics for dynamically triggered slip in a granular medium*, Phil. Mag. **92** (28-30), 3520-3539 (2012). DOI: 10.1080/14786435.2012.700417.
21. M. Sedighi-Gilani, **M. Griffa**, D. Mannes, E. Lehmann, J. Carmeliet, D. Derome, *Visualization and quantification of liquid water transport in softwood by means of neutron radiography*, Int. J. Heat Mass Transp. **55**, 6211-6221 (2012).
22. **M. Griffa**, E.G. Daub, R.A. Guyer, P.A. Johnson, C. Marone, J. Carmeliet, *Vibration-*

induced slip in sheared granular layers and the micromechanics of dynamic earthquake triggering, *Europhys. Lett.* **96**, 14001/1-6 (2011). DOI: 10.1209/0295-5075/96/14001.

23. B.E. Anderson, **M. Griffa**, T.J. Ulrich, P.A. Johnson, *Time reversal reconstruction of finite size sources in elastic media*, *J. Acoust. Soc. Amer.* **130** (4), EL219-EL225 (2011). DOI: 10.1121/1.3635378.
24. B.E. Anderson, **M. Griffa**, P-Y. Le Bas, T.J. Ulrich, P.A. Johnson, *Experimental implementation of reverse time migration for nondestructive evaluation applications*, *J. Acoust. Soc. Amer.* **129** (1), EL8-EL14 (2011). DOI: 10.1121/1.3526379.
25. D. Derome, **M. Griffa**, M. Koebel, J. Carmeliet, *Hysteretic swelling of wood at cellular scale probed by phase-contrast X-ray tomography*, *J. Struct. Biol.* **173**, 180-190 (2011). DOI: 10.1016/j.jsb.2010.08.011. [Abstract](#).
26. M. Scalerandi, **M. Griffa**, P.A. Johnson, *Robustness of computational time reversal imaging in media with elastic constant uncertainties*, *J. Appl. Phys.* **106** (11), 114911-1/10 (2009). DOI: 10.1063/1.3269718. [Abstract](#).
27. T.J. Ulrich, K. Van Den Abeele, P-Y. Le Bas, **M. Griffa**, B.E. Anderson, R.A. Guyer, *Three Component Time Reversal: Focusing Vector Components Using A Scalar Source*, *J. Appl. Phys.* **106** (11), 113504-1/7 (2009). DOI: 10.1063/1.3259371. [Abstract](#).
28. B.E. Anderson, R.A. Guyer, T.J. Ulrich, P-Y. Le Bas, C. Larmat, **M. Griffa**, P.A. Johnson, *Energy current imaging method for time reversal in elastic media*, *Appl. Phys. Lett.* **95** (2), 021907-1/3 (2009). DOI: 10.1063/1.3180811. [Abstract](#).
29. B.E. Anderson, T.J. Ulrich, **M. Griffa**, P-Y. Le Bas, M. Scalerandi, A.S. Gliozzi, P.A. Johnson, *Experimentally identifying masked sources applying time reversal with the selective source reduction method*, *J. Appl. Phys.* **105** (8), 083506-1/11 (2009). DOI: 10.1063/1.3079517. [Abstract](#).
30. T.J. Ulrich, **M. Griffa**, B.E. Anderson, *Symmetry-based imaging condition in time-reversed acoustics*, *J. Appl. Phys.* **104**, 064912-1/8 (2008). DOI:10.1063/1.2980323. [Abstract](#).
31. M. Scalerandi, A.S. Gliozzi, B.E. Anderson, **M. Griffa**, P.A. Johnson, T.J. Ulrich, *Selective Source Reduction to identify masked sources using Time Reversal Acoustics*, *J. Phys. D Appl. Phys.* **41**, 155504-1/12 (2008).
32. **M. Griffa**, B.E. Anderson, R.A. Guyer, T.J. Ulrich, P.A. Johnson, *Investigation of the robustness of time reversal acoustics in solid media through the reconstruction of temporally symmetric sources*, *J. Phys. D Appl. Phys.* **41**, 085415-1/14 (2008).
33. B.E. Anderson, **M. Griffa**, C. Larmat, T.J. Ulrich, P.A. Johnson, *Time Reversal*, *Acoustics Today* **4** (1), 4-16 (2008).
34. P.P. Delsanto, C.A. Condat, N. Pugno, A.S. Gliozzi, **M. Griffa**, *A multilevel approach to cancer growth modeling*, *J. Theor. Biol.* **250** (1), 16-24 (2008).
35. A.S. Gliozzi, **M. Griffa**, M. Scalerandi, *Efficiency of Time Reversed Acoustics in Nonlinear Defect Imaging in Solids*, *J. Acoust. Soc. Amer.* **120** (5), 2506-2517

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36. M. Scalerandi, **M. Nobili**, **M. Griffa**, A. Gliozzi, F. Bosia, *A Preisach-Mayergoyz approach to fatigue induced irreversibility*, Phys. Rev. B **73**, 092103 (2006).
37. **M. Bentahar**, **H. El. Aqra**, R. El Guerjouma, **M. Griffa**, M. Scalerandi, *Hysteretic elasticity in damaged concrete: quantitative analysis of slow and fast dynamics*, Phys. Rev. B **73**, 014116 (2006).
38. P.P. Delsanto, **M. Griffa**, C.A. Condat, **S. Delsanto**, **L. Morra**, *Bridging the gap between mesoscopic and macroscopic models: the case of multicellular tumor spheroids*, Phys. Rev. Lett. **94**, 148105 (2005).
39. **M. Griffa**, M. Scalerandi, C. Camagna, *Influence of the Medium Rigidity on the Growth of Multicellular Tumor Spheroids*, European Physical Journal: Applied Physics **30**, 65-71 (2005).
40. **M. Griffa**, M. Scalerandi, *Environmental physical modulation of intrinsic tendency to growth of Multicellular Tumor Spheroids: in silico experiments*, Phys. Scripta **T118**, 183 - 186 (2005).
41. **M. Griffa**, M. Scalerandi, *Physical modeling and simulations of tumor growth and angiogenesis: predictions and new hypotheses*, Phys. Scripta **T118**, 179 -182 (2005).
42. P.P. Delsanto, **L. Morra**, **S. Delsanto**, **M. Griffa**, C. Guiot, *Towards a Model of Local and Collective Mechanisms in Multicellular Tumor Spheroids Growth*, Phys. Scripta **T118**, 157 - 160 (2005).

ACCEPTED

SUBMITTED

1. E. Franzoni, A. Leemann, **M. Griffa**, P. Lura, *The „Terranova“ render of the Engineering Faculty in Bologna (Giuseppe Vaccaro, 1931-1935): An example of outstanding durability*, submitted to Materials and Structures (February 2017).

IN PREPARATION

1. **S. Iswar**, **M. Griffa**, R. Kaufmann, M. Beltran, **L. Huber**, S. Brunner, M. Lattuada, M.K. Koebel, W.J. Malfait, *Effect of aging on thermal conductivity of fiber-reinforced aerogel composites: An X-ray micro-tomography investigation*, to be submitted to Micropor. Mesopor. Mat.
2. **M. Griffa**, **G. Igarashi**, M. Scalerandi, A. Leemann, J. Neuenschwander, S. Sanabria, P. Lura, *Alkali-Silica Reaction damage progression: detection by nonlinear ultrasounds and characterization by X-ray micro-tomography*, to be submitted to Cem. Concr. Res.
3. **M. Griffa**, **G. Igarashi**, A. Leemann, J. Neuenschwander, P. Lura, *An investigation of the correlations between cracking and the nonlinear elastic behavior of concrete by X-ray micro-tomography*, to be submitted to J. Appl. Phys.

4. **M. Griffa**, A. Leemann, B. Münch, R. Mokso, F. Marone, P. Lura, *Synchrotron radiation-based X-ray Tomographic Microscopy of Alkali-Aggregate Reaction damage produced in concrete by different acceleration protocols, to be submitted to J. Microscopy.*

Papers in non-SCI(E) Journals

1. M. Scalerandi, **M. Griffa**, *Modelling the coupling between apoptosis and host rigidity in the growth of Multicellular Tumour Spheroids*, WSEAS Transactions on Biology and Biomedicines **1**, 237 (2004).

2. **M. Griffa**, S. Delsanto, L. Morra, P.P. Delsanto, *Mesoscopic Modeling of Multicellular Tumor Spheroids: Validation through a Quantitative Comparison with Experimental Data*, WSEAS Transactions on Biology and Biomedicines **1**, 249 (2004).

Papers in Proceedings of International Conferences

1. S. Hu, F. Yang, **M. Griffa**, R. Kaufmann, G. Anton, A. Maier, C. Riess, *Towards quantification of kidney stones using X-ray dark-field tomography*, Proceed. Of the 14th IEEE International Symposium on Biomedical Imaging, April 18th - 21st 2017, Melbourne, Australia. [Abstract](#). DOI: [10.1109/ISBI.2017.7950711](https://doi.org/10.1109/ISBI.2017.7950711).

2. U.M. Arepalli, R.B. Mallick, P. Mathisen, L. Poulikakos, **M. Griffa**, S. Hartmann, D. Nener-Plante, *A study of hot mix asphalt (HMA) susceptible to moisture induced material loss*, Proceed. of 96th Annual Meeting of the Transportation Research Board, Paper n° 17-04156. [Abstract](#).

3. F. Yang, **M. Griffa**, A. Hipp, H. Derluyn, P. Moonen, R. Kaufmann, M. Boone, F. Beckmann, P. Lura, *Advancing the visualization of pure water transport in porous materials by fast, Talbot interferometry-based multi-contrast X-ray Micro-Tomography*, Proceed. SPIE 9967, Paper 99670L, „Development of X-ray Tomography X“, Aug. 28th - Sept. 1st 2016, San Diego (CA), USA (August 2016). DOI: 10.1117/12.2236221. [Abstract](#).

4. L. Poulikakos, **M. Griffa**, M.C. Cavalli, M. Partl, *Digital sieving as a tool for designing high RAP mixtures*, [International Symposium on Asphalt Pavements and Environment \(ISAP2016\)](#) and [53rd Annual Petersen Asphalt Research Conference](#), July 18th - 21st 2016, Western Research Institute, Jackson Hole (USA).

5. R. Kaufmann, F. Yang, M. Beltran, S. Hartmann, **M. Griffa**, P. Lura, A. Neels, *Dark-Field Imaging on Micro- and Macro-Focus Sources in Comparison with Normal Micro-CT for Building Materials*, Proceed. 19th World Conference on Non-Destructive Testing (WCNDT 2016), June 13th - 17th 2016, Munich (Germany).

6. R. Kaufmann, F. Yang, F. Prade, **M. Griffa**, I. Jerjen, C. Di Bella, J. Herzen, A. Sarapata, F. Pfeiffer, P. Lura, A. Neels, *Enhancing X-ray imaging of liquids in porous materials*, Proceedings of the [Digital Industrial Radiology and Computed Tomography \(DIR2015\)](#) conference, June 22nd - 25th 2015, Ghent (Belgium).

7. R. Kaufmann, A. Flisch, **M. Griffa**, S. Hartmann, J. Hofmann, I. Jerjen, Y. Liu, T. Lüthi, A. Neels, M. Plamondon, F.A. Reifler, P. Schuetz, C. Stritt, F. Yang, A. Dommann, [New directions in X-ray tomography](#), Proceedings of the 11th European Conference

on Non-Destructive Testing (ECNDT 2014), September 6th - 10th 2014, Prague (Czech Republic).

8. B. Weber, M. Wyrzykowski, **M. Griffa**, S. Carl, E. Lehmann, P. Lura, *Neutron radiography of heated high-performance mortar*, MATEC Web of Conferences **6**, 03004 (2013). DOI: 10.1051/mateconf/20130603004. [Abstract](#). [3rd International Workshop on Concrete Spalling due to Fire Exposure \(Fire Spalling 2013\)](#), September 25th - 27th 2013, Paris (France). Peer-Reviewed.
9. **M. Griffa**, B. Münch, **G. Igarashi**, A. Leemann, R. Mokso, I. Jerjen, P. Schuetz, P. Lura, *Damage in Cement-based Materials by the Alkali-Aggregate Reaction: Detection and Characterization by X-ray Tomographic Microscopy*, extended abstract, pages 317-320, Book of Abstracts (Vol. 2, Posters), [1st International Conference on Tomography of Materials and Structures \(ICTMS2013\)](#), July 1st - 5th 2013, Ghent (Belgium). Peer-Reviewed.
10. P. Antonaci, A.S. Gliozzi, **M. Griffa**, M. Scalerandi, [Damage assessment in solids through nonlinear ultrasonics in the time domain](#), Proceed. of the 13th International Symposium on Nondestructive Characterization of Materials, May 20th - 24th 2013, Le Mans, France. 8 pages (Peer-Reviewed)
11. **H. Derluyn**, **M. Griffa**, D. Mannes, I. Jerjen, **J. Dewanckele**, P. Vontobel, A. Sheppard, M. N. Boone, D. Derome, V. Cnudde, E. Lehmann, J. Carmeliet, *Probing salt crystallization damage mechanisms in porous limestone with neutron radiography and X-ray tomography*, Proceedings of the 5th International Building Physics Conference, the 5th IBPC organizing committee (eds.), May 28th - 31st 2012, Kyoto, Japan, 95-102 (Peer-Reviewed).
12. **H. Derluyn**, **M. Griffa**, D. Mannes, I. Jerjen, **J. Dewanckele**, P. Vontobel, D. Derome, V. Cnudde, E. Lehmann, J. Carmeliet, *Quantitative analysis of saline transport and crystallization damage in porous limestone visualized by neutron and X-ray imaging*, Proceedings of the Salt and Weathering on Buildings and Stone Sculptures (SWBBS) 2011 conference, October 19th - 22nd 2011, Limassol, Cyprus (Peer-Reviewed).
13. B.E. Anderson, **M. Griffa**, T.J. Ulrich, P-Y. Le Bas, R.A. Guyer, P.A. Johnson, *Crack localization and characterization in solid media using time reversal techniques*, Proceedings of the 44th US Rock Mechanics Symposium, June 27th - 30th 2010, Salt Lake City, Utah, USA (Peer-Reviewed).
14. B.E. Anderson, T.J. Ulrich, **M. Griffa**, P.A. Johnson, M. Scalerandi, A. Gliozzi, *Selective Source Reduction to Identify Masked Smaller Sources Using Time Reversal Acoustics*, Proceedings of QNDE (Quantitative Non-Destructive Evaluation) 2007 Conference, July 22nd - 27th 2007, Golden, Colorado, USA.
15. T.J. Ulrich, B.E. Anderson, **M. Griffa**, *Improving Focal Determination of Time Reversed Acoustic Signals*, Proceedings of QNDE (Quantitative Non-Destructive Evaluation) 2007 Conference, July 22nd - 27th 2007, Golden, Colorado, USA.
16. B.E. Anderson, P.A. Johnson, T.J. Ulrich, **M. Griffa**, *Complex source imaging using time-reversal (TR): experimental studies of spatial and temporal resolution limits*, Proceedings of the 153rd Meeting of the Acoustical Society of America, June 4th - 8th 2007, Salt Lake City, Utah, USA.
17. **M. Griffa**, P.A. Johnson, R.A. Guyer, T.J. Ulrich, B.E. Anderson, Time Reversal

Acoustics (TRA) reconstruction of symmetric-in-time sources in solid elastic specimens: investigation of the effects of finite-size transducers on TRA in solids, Proc. XII International Workshop on Nonlinear Elasticity in Materials (IWNEM), Ajaccio (Corsica), June 3rd - 9th 2007.

18. **M. Nobili**, F. Bosia, A. Gliozzi, **M. Griffa**, M. Scalerandi, *Acoustic Emission and Nonlinear Elasticity in Fatigue Induced Damage*, Proceedings of the 12th International Congress on Sound and Vibration - ICSV12 - Lisbon, July 11th - 14th 2005.
19. F. Bosia, P.P. Delsanto, A. Gliozzi, **M. Griffa**, **M. Nobili**, M. Scalerandi, *Acoustic Emission and Nonlinear Hysteretic Elasticity: a combined model*, Proceedings of the 12th International Congress on Sound and Vibration - ICSV12 - Lisbon, July 11th - 14th 2005.
20. **M. Bentahar**, R. El Guerjouma, **M. Griffa**, M. Scalerandi, *Méthodes émergents en acoustique non-linéaire pour le contrôle non destructif et le contrôle de santé des matériaux*, Proceedings of the 17th French Congress of Mechanics, August 29th - September 2nd, Troyes (France).
21. **S. Delsanto**, **L. Morra**, **M. Griffa**, C. Demartini, A Genetic Algorithms' Approach to the Exploration of Parameter Space in Mesoscopic Multicellular Tumor Spheroids Models, Conference Proceedings, IEEE EMBC 2004 (26th Annual International Conference of the IEEE Engineering in Medicine and Biology Society), 1-5 Sept. 2004, Vol. 1, 675-678;

Chapters in Books

1. M. Scalerandi, **M. Nobili**, **M. Griffa**, A.S. Gliozzi and F. Bosia, *Numerical Analysis of the Anomalous Elastic Behavior of Hysteretic Media: Quasi-Static, Dynamic and Relaxation Experiments*, Chapter 17, pag. 267-284, in *The universality of nonclassical nonlinearity/ with applications to NDE and Ultrasonics*, edited by P.P. Delsanto, Springer (New York), 2006.
2. **S. Delsanto**, **M. Griffa**, **L. Morra**, *Inverse Problems and Genetic Algorithms. Applications in NDE/NDT & Ultrasonics*, Chapter 22, pag. 369-386, in *The universality of nonclassical nonlinearity/ with applications to NDE and Ultrasonics*, edited by P.P. Delsanto, Springer (New York), 2006.

Technical reports

A. Leemann, **M. Griffa**, [*Diagnosis of alkali-aggregate reaction in dams*](#), state-of-the-art report, Swiss Federal Office of Energy project nr. [SI/500863-01](#).