List of Publications – Ueli M. Angst

March 2021

Summary

Scientific journal papers:	70 published/in press (30 as first author)	
Conference papers:	45 (16 as first author)	
Conference presentations:	57 (23 presented by myself)	
Invited lectures / seminars:	12	
Book chapters:	2	
Links to	Google Scholar Profile	Researcher ID: M-6348-2014

Scientific peer-reviewed journal publications (published or in press)

70. Ren F, Zhou C, Zeng Q, Zhang Z, **Angst U**, Wang W. Quantifying the anomalous water absorption behavior of cement mortar in view of its physical sensitivity to water.
Cement and Concrete Research 143 (2021) 106395
doi.org/10.1016/j.cemconres.2021.106395

69. **Angst U**, Moro F, Geiker M, Kessler S, Beushausen H, Andrade C, Lahdensivu J, Köliö A, Imamoto K, von Greve-Dierfeld S, Serdar M. Corrosion of steel in carbonated concrete: mechanisms, practical experience, and research priorities – a critical review by RILEM TC 281-CCC.
RILEM Technical Letters 5 (2020) 85-100. Open access: doi.org/10.21809/rilemtechlett.2019.90

68. Zhang Z, Shakoorioskooie M, Griffa M, Lura P, **Angst U**. A laboratory investigation of cutting damage to the steel-concrete interface.
Cement and Concrete Research 138 (2020) 106229
Open access: doi.org/10.1016/j.cemconres.2020.106229

67. Bodie K, Brunner M, Pantic M, Walser S, Pfändler P, **Angst U**, Siegwart R, Nieto J. Active Interaction Force Control for Omnidirectional Aerial Contact-Based Inspection.
IEEE Transactions on Robotics (2020) Open access: doi:10.1109/TRO.2020.3036623

66. Zhang Z, **Angst U**. A dual-permeability approach to study anomalous moisture transport properties of cement-based materials.
Transport in Porous Media 135 (2020) 59–78 Open access: doi.org/10.1007/s11242-020-01469-y

65. Käthler CB, **Angst U**, Ebell G, Elsener B. Chloride-induced reinforcement corrosion in cracked concrete: the influence of time of wetness on corrosion propagation.
Corrosion Engineering Science and Technology (2020) doi:10.1080/1478422X.2020.1789371

64. Stefanoni M, **Angst U**, Elsener B. The mechanism controlling corrosion of steel in carbonated cementitious materials in wetting and drying exposure.
Cement and Concrete Composites 113 (2020) 103717 doi.org/10.1016/j.cemconcomp.2020.103717

63. Yilmaz D, **Angst U**. Corrosion costs in civil engineering structures of the Swiss road network (in German).
Beton- und Stahlbetonbau 115 (2020) doi.org/10.1002/best.202000004

62. Martinelli-Orlando F, Shi W, **Angst U**. Corrosion behavior of carbon steel in alkaline, deaerated solutions: influence of carbonate ions.
Journal of The Electrochemical Society 167 (2020) 061503. doi.org/10.1149/1945-7111/ab7d44

61. Käthler CB, **Angst U**, Hornbostel K, Elsener B. Critical analysis of experiments on reinforcing bar corrosion in cracked concrete.
ACI Materials Journal 117 (2020) 145–154. doi: 10.14359/51722408

60. Vitaller AV, **Angst U**. Elsener B. Laboratory tests simulating corrosion in geothermal power plants – influence of service conditions.
Geothermal Energy: Science, Society, and Technology 8 (2020) Open access: doi.org/10.1186/s40517-020-00163-y

59. **Angst U**, Büchler M. A new perspective on measuring the corrosion rate of localized corrosion.
Materials and Corrosion 71 (2020) 808–823. doi.org/10.1002/maco.201911467

58. Zhang Z, **Angst U**. Modeling anomalous moisture transport in cement-based materials with kinetic permeability.
International Journal of Molecular Sciences 21 (2020) 837. Open access: www.mdpi.com/1422-0067/21/3/837

57. Vitaller AV, **Angst U**. Elsener B. A setup for electrochemical corrosion testing at elevated temperature and pressure.
Measurement 155 (2020) 107537. doi:10.1016/j.measurement.2020.107537

56. Zhang Z, **Angst U**. A discussion of the paper “Effect of design parameters on microstructure of steel-concrete interface in reinforced concrete”
Cement and Concrete Research 128 (2020) 105949. doi:10.1016/j.cemconres.2019.105949

55. Käthler CB, **Angst U**, Aguilar AM, Elsener B. A novel approach to systematically collect critical chloride contents in concrete in an open access data base.
Data in Brief 27 (2019) 104675. Open access: dx.doi.org/10.1016/j.dib.2019.104675

54. **Angst U**. A Critical Review of the Science and Engineering of Cathodic Protection of Steel in Soil and Concrete. (Invited critical review)
CORROSION 75 (2019) 1420–1433. Open access: dx.doi.org/10.5006/3355

53. Stefanoni M, **Angst U**, Elsener B. Kinetics of electrochemical dissolution of metals in porous media.
Nature Materials (2019). doi:10.1038/s41563-019-0439-8

52. **Angst U**, Geiker MR, Alonso MC, Polder R, Elsener B, Isgor OB, Wong H, Michel A, Hornbostel K, Gehlen C, François R, Sanchez M, Criado M, Sørensen H, Hansson C, Pillai R, Mundra S, Gulikers J, Raupach M, Pacheco J, Sagüés A. The effect of the steel-concrete interface on chloride-induced corrosion initiation in concrete – a critical review by RILEM TC 262-SCI
Materials and Structures 52 (2019) 88. doi:10.1617/s11527-019-1387-0

51. Isgor B, **Angst U**, Geiker M, Hansson C, Pacheco J, Tepke D, Trejo D, Vaddey NP. Recommended practice for reporting experimental data produced from studies on corrosion of steel in cementitious systems.
RILEM Technical Letters 4 (2019) 22–32. Open access: doi.org/10.21809/rilemtechlett.2019.90

50. Boschmann C, **Angst U**, Aguilar AM, Elsener B. A systematic data collection on chloride-induced steel corrosion in concrete to improve service life modelling and towards understanding corrosion initiation.
Corrosion Science 157 (2019) 331-336. doi:10.1016/j.corsci.2019.06.008

49. Shi W, **Angst U**, Yilmaz D, Wenk K, Frangi A. Corrosion of Metallic Fasteners in Timber–Concrete Composite Structures.
Materials and Structures 52 (2019) 58. doi:10.1617/s11527-019-1358-5

48. Stefanoni M, **Angst U**, Elsener B. Influence of Calcium Nitrate and Sodium Hydroxide on Carbonation Induced Steel Corrosion in Concrete.
Corrosion 75 (2019) 737–744. doi:10.5006/3085

47. Vitaller AV, **Angst U**, Elsener B. Corrosion behaviour of L80 steel grade in geothermal power plants in Switzerland.
Metals 9 (2019) 331. Open access: doi:10.3390/met9030331

46. Yin Cao, Gehlen Ch, **Angst U**, Ling Wang, Zhendi Wang, Yan Yao. Critical chloride content in reinforced concrete — An updated review considering Chinese experience.
Cement and Concrete Research 117 (2019) 58–68. doi:10.1016/j.cemconres.2018.11.020

45. **Angst U**. Predicting the time to corrosion initiation in reinforced concrete structures exposed to chlorides.
Cement and Concrete Research 115 (2019) 559–567. doi:10.1016/j.cemconres.2018.08.007

44. Tang L, Frederiksen JM, **Angst U**, Polder R, Alonso MC, Elsener B, Hooton RD, Pacheco J. Experiences from RILEM TC 235- CTC in recommending a test method for chloride threshold values in concrete.
RILEM Technical Letters 3 (2018) 25–31. Open access: doi.org/10.21809/rilemtechlett.2018.55

43. Femenias YS, **Angst U**, Moro F, Elsener B. Development of a novel methodology to assess the corrosion threshold in concrete based on simultaneous monitoring of pH and free chloride concentration.
Sensors 18 (2018) 3101. Open access: doi.org/10.3390/s18093101

42. Stefanoni M, Zhang Z, **Angst U**, Elsener B. The kinetic competition between transport and oxidation of ferrous ions governs precipitation of corrosion products in carbonated concrete.
RILEM Technical Letters 3 (2018) 8–16. Open access: doi.org/10.21809/rilemtechlett.2018.57

41. Stefanoni M, **Angst U**, Elsener B. Electrochemistry and capillary condensation theory reveal the mechanism of corrosion in dense porous media.
Scientific Reports 8 (2018) 7407. Open access: dx.doi.org/10.1038/s41598-018-25794-x

40. **Angst U**. Challenges and opportunities in corrosion of steel in concrete.
Materials and Structures 51 (2018) 4. Open access: dx.doi.org/10.1617/s11527-017-1131-6

39. **Angst U**, Büchler M. Impact of *IR*-drops on the -850 mV_{CSE} cathodic protection criterion for coated steel pipes in soil.
Journal of Pipeline Systems – Engineering and Practice 9 (2018) 04017035
doi:10.1061/(ASCE)PS.1949-1204.0000306

38. Stefanoni M, **Angst U**, Elsener B. Corrosion rate of carbon steel in carbonated concrete – A critical review.
Cement and Concrete Research 103 (2018) 35–48. doi:10.1016/j.cemconres.2017.10.007

37. Femenias Y, **Angst U**, Elsener B. Monitoring pH in corrosion engineering by means of thermally-produced iridium oxide electrodes.
Materials and Corrosion 69 (2018) 76–88. doi:10.1002/maco.201709715

36. **Angst U**, Elsener B. The size effect in corrosion greatly influences the predicted life span of concrete infrastructures.
Science Advances 3 (2017) e170075. Open access: doi.org/10.1126/sciadv.1700751

35. Segui Femenias Y, **Angst U**, Elsener B. pH-monitoring in mortar with thermally-oxidized iridium electrodes.
RILEM Technical Letters 2 (2017) 59–66. Open access: doi.org/10.21809/rilemtechlett.2017.37

34. **Angst U**, Boschmann C, Wagner M, Elsener B. Experimental Protocol to Determine the Chloride Threshold Value for Corrosion in Samples Taken from Reinforced Concrete Structures.
Journal of Visualized Experiments (2017) Open access: doi:10.3791/56229

33. Elsener B, **Angst U**. Corrosion inhibitors for steel in concrete – an update.
Metallurgia Italiana 109 (2017) 59–62.

32. Boschmann Käthler C, **Angst U**, Wagner M, Elsener B. Image analysis for determination of cement content in concrete to improve accuracy of chloride analyses.
Cement and Concrete Research 99 (2017) 1–7. doi:10.1016/j.cemconres.2017.04.007

31. **Angst U**, Geiker MR, Michel A, Gehlen C, Wong H, Isgor BO, Elsener B, Hansson CM, François R, Hornbostel K, Polder R, Alonso MC, Sanchez M, Correia MJ, Criado M, Sagüés A, Buenfeld N.
The steel-concrete interface.
Materials and Structures 50 (2017) 143. Open access

30. **Angst U**, Büchler M, Schlumpf J, Marazzani B, Bakalli M. Long-term field performance of an organic corrosion inhibitor for reinforced concrete.
Materials Performance 55 (2016) 36–40.

29. **Angst U**, Elsener B. Chloride Threshold Values in Concrete – A Look Back and Ahead.
ACI Special Publication SP-308 “Chloride Thresholds and Limits for New Construction”. American Concrete Institute, 2016.

28. Hornbostel K, Elsener B, **Angst U**, Larsen CK, Geiker MR. Limitations of the use of concrete bulk resistivity as an indicator for the rate of chloride-induced macro-cell.
Structural Concrete 18 (2016) 326–333. doi:10.1002/suco.201500141

27. Keßler S, **Angst U**, Zintel M, Elsener B, Gehlen C. Epoxy-coated reinforcement in concrete structures: Results of a Swiss pilot project after 24 years of field exposure.
Materials and Corrosion 67 (2016) 631–638. doi:10.1002/maco.201608863

26. Hornbostel K, **Angst U**, Elsener B, Larsen CK, Geiker MR. Influence of mortar resistivity on the rate-limiting step of chloride-induced macro-cell corrosion of reinforcing steel.
Corrosion Science 110 (2016) 46–56. doi:10.1016/j.corsci.2016.04.011

25. **Angst U**, Büchler M, Martin B, Schöneich H-G, Haynes G, Leeds S, Kajiyama F. Cathodic protection of soil buried steel pipelines – a critical discussion of protection criteria and threshold values.
Materials and Corrosion 67 (2016) 1135–1142. doi:10.1002/maco.201608862

24. Femenias Y, **Angst U**, Caruso F, Elsener B. Ag/AgCl ion-selective electrodes in neutral and alkaline environments containing interfering ions.
Materials and Structures 49 (2016) 2637–2651. doi:10.1617/s11527-015-0673-8

23. **Angst U**, Büchler M, Schlumpf J, Marazzani B. An organic corrosion-inhibiting admixture for reinforced concrete: 18 years of field experience.
Materials and Structures 49 (2016) 2807–2818. doi:10.1617/s11527-015-0687-2

22. **Angst U**, Büchler M. On the applicability of the Stern-Geary relationship to determine instantaneous corrosion rates in macro-cell corrosion.
Materials and Corrosion 66 (2015) 1017–1028. doi: 10.1002/maco.201407997

21. Hornbostel K, **Angst U**, Elsener B, Larsen CK, Geiker MR. On the limitations of predicting the ohmic resistance in a macro-cell in mortar from bulk resistivity measurements.
Cement and Concrete Research 76 (2015) 147–158. doi:10.1016/j.cemconres.2015.05.023

20. Stefanoni M, **Angst U**, Elsener B. Local electrochemistry of reinforcement steel – Distribution of open circuit and pitting potentials on steels with different surface condition.
Corrosion Science 98 (2015) 610–618. doi: 10.1016/j.corsci.2015.06.004

19. Keßler S, **Angst U**, Zintel M, Gehlen C. Defects in epoxy coated reinforcement and their impact on the service-life of a concrete structure.
Structural Concrete 16 (2015) 398–405. doi: 10.1002/suco.201400085

18. **Angst U**, Elsener B. On the applicability of the Wenner method for resistivity measurements of concrete.
ACI Materials Journal 111 (2014) 661–672.

17. Zintel M, **Angst U**, Keßler S, Gehlen C. Epoxy-coated reinforcement – New findings after two decades of practical experience (in German)
Beton- und Stahlbetonbau 109 (2014) 3–14. doi: 10.1002/best.201300066

16. **Angst U**, Elsener B. Measuring corrosion rates: a novel AC method based on processing and analysing signals recorded in the time domain.
Corrosion Science 89 (2014) 307–317. doi: 10.1016/j.corsci.2014.09.013

15. **Angst U**, Büchler M, Moro F. Assessment of cement-based fill materials for the annulus of pipeline casings.
Materials Performance 53 (2014) 32–37.

14. **Angst U**, Polder R. Spatial variability of chloride in concrete within homogeneously exposed areas.
Cement and Concrete Research 56 (2014) 40-51. doi:10.1016/j.cemconres.2013.10.010

13. Jamali A, **Angst U**, Adey B, Elsener B. Modeling of corrosion-induced concrete cover cracking: a critical analysis.
Construction & Building Materials 42 (2013) 225–237. doi:10.1016/j.conbuildmat.2013.01.019

12. **Angst U**, Elsener B, Jamali A, Adey B. Concrete cover cracking owing to reinforcement corrosion **–** theoretical considerations and practical experience.
Materials and Corrosion 63 (2012) 1069–1077. doi: 10.1002/maco.201206669

11. **Angst U**, Hooton RD, Marchand J, Page CL, Flatt RJ, Elsener B, Gehlen Ch, Gulikers J. Present and future durability challenges for reinforced concrete structures.
Materials and Corrosion 63 (2012) 1047–1051. doi: 10.1002/maco.201206898

10. **Angst U**, Elsener B, Larsen CK, Vennesland Ø. Chloride induced reinforcement corrosion: Electrochemical monitoring of initiation stage and chloride threshold values.
Corrosion Science 53 (2011) 1451–1464. doi:10.1016/j.corsci.2011.01.025

9. **Angst U**, Elsener B, Larsen CK, Vennesland Ø. Chloride induced reinforcement corrosion: Rate limiting step of early pitting corrosion.
Electrochimica Acta 56 (2011) 5877–5889. doi:10.1016/j.electacta.2011.04.124

8. **Angst U**, Rønnquist A, Elsener B, Larsen CK, Vennesland Ø. Probabilistic considerations on the effect of specimen size on the critical chloride content in reinforced concrete.
Corrosion Science 53 (2011) 177–187. doi:10.1016/j.corsci.2010.09.017

7. **Angst U**. A discussion of the paper “Influence of surface charge on ingress of chloride ion in hardened pastes” by Y. Elakneswaran, T. Nawa, and K. Kurumisawa.
Materials and Structures 44 (2011) 1–3. doi:10.1617/s11527-010-9667-8

6. **Angst U**, Elsener B, Larsen CK, Vennesland Ø. Potentiometric determination of the chloride ion activity in cement based materials.
Journal of Applied Electrochemistry 40 (2010) 561–573. doi:10.1007/s10800-009-0029-6

5. **Angst U**, Elsener B, Myrdal R, Vennesland Ø. Diffusion potentials in porous mortar in a moisture state below saturation.
Electrochimica Acta 55 (2010) 8545–8555. doi:10.1016/j.electacta.2010.07.085

4. **Angst U**, Elsener B, Larsen CK, Vennesland Ø. Critical chloride content in reinforced concrete **–** A review.
Cement and Concrete Research 39 (2009) 1122–1138. doi:10.1016/j.cemconres.2009.08.006

3. **Angst U**, Vennesland Ø, Myrdal R. Diffusion potentials as source of error in electrochemical measurements in concrete.
Materials and Structures 42 (2009) 365–375. doi:10.1617/s11527-008-9387-5

2. **Angst U**, Vennesland Ø. Detecting critical chloride content in concrete using embedded ion selective electrodes – effect of liquid junction and membrane potentials.
Materials and Corrosion 60 (2009) 638–643. doi:10.1002/maco.200905280

1. Elsener B, **Angst U**. Mechanism of electrochemical chloride removal.
Corrosion Science 49 (2007) 4504 – 4522. doi:10.1016/j.corsci.2007.05.019

Other publications in journals

- Boschmann C and **Angst U**. Der kritische Chloridgehalt – Bestimmung am Bauwerk und Einfluss auf die Lebensdauer. *Bautechnik*. Nov (2019). doi:10.1002/bate.201900089
- Büchler M and **Angst U**. Kathodischer Korrosionsschutz: relevante Einflussgrössen und deren Auswirkungen. *Energie - Wasser-Praxis* 6/7 (2016) 56–67.
- **Angst U**. "Prof. Dr. Bernhard Elsener – dedication on the occasion of his 60th birthday". *Materials and Corrosion* 63 (2012) 1046. doi:10.1002/maco.201206771

PhD thesis

- **Angst U**. Chloride induced reinforcement corrosion in concrete; concept of critical chloride content – methods and mechanisms. 2011, NTNU Trondheim, Norway. ISBN 978-82-471-2762-9.

Research reports

- **Angst U** and Büchler M. Electrochemical determination of the corrosion rate for localized corrosion in reinforced concrete. Research report AGB 2015/009, no. 698, funded by the Swiss Federal Roads Office, 100 p, September 2019. (in German) Link for Download
- Elsener B, **Angst U**, Pfändler P, Glauser O. Half-cell potential mapping robot for reinforced concrete structures – automated assessment of the corrosion state. Research report no. 692, AGB 2012/011_OBF, funded by the Swiss Federal Roads Office, 130 p, October 2018. (in German). Link for Download
- Boschmann Käthler C, **Angst U**, Wagner M, Larsen CK, Elsener B. Effect of cracks on chloride-induced corrosion of steel in concrete - a review, Norwegian Public Roads Administration, report No. 454, 2017. Link for Download.
- **Angst U** and Büchler M. Monitorable post-tensioning systems. Research report prepared in collaboration with wsp for the Federal Highway Administration of the US. 62 p, 2016.
- **Angst U**, Wagner M, Elsener B, Leemann A, van Nygaard P. Method to determine the critical chloride content of existing reinforced concrete structures. Research report no. 677, AGB 2012/010, funded by the Swiss Federal Roads Office, 100 p, April 2016. (in German) Link for Download
- **Angst U** and Büchler M. Optimizing and validating methods for the determination of the corrosion rate in reinforced concrete. Research report no. 670, AGB 2012/013, funded by the Swiss Federal Roads Office, 116 p, October 2015. (in German)
- **Angst U** and Büchler M. Cathodically protected steel in soil – temperature effects. Research report of a laboratory study performed for a client, Swiss Society for Corrosion Protection, 30 p, 2014.
- **Angst U** and Büchler M. Field test of corrosion-inhibiting admixture Sika FerroGard 901. Research report of a study performed for a client, Swiss Society for Corrosion Protection, 41 p, 2014.
- **Angst U** and Büchler M. Assessment of cement-based fill materials for the annulus of cased pipes in pipeline construction. Research report of a laboratory study performed for a client, Swiss Society for Corrosion Protection, 60 p, 2013.

Contributions to books

- Elsener B, **Angst U**. Corrosion inhibitors for reinforced concrete. Chapter 14, in: Science and Technology of Concrete Admixtures, 1st Ed. Eds: Pierre-Claude Aïtcin P-C, Flatt RJ. Woodhead Publishing, 2015, p. 321–340.
- Alonso MC, **Angst U**, Sanchez M, Ann KY. Onset of chloride induced reinforcement corrosion. In: Handbook of Concrete Durability. Eds: Kim S-H, Ann KY. Middleton Publishing Inc., 2010, pp 1-48.

Conference contributions

* Asterisks = presentation and conference paper. Without asterisk = presentation without paper.

57.* Yilmaz D, Häfliger S, Kaufmann W, **Angst U**. New conceptual approach combining the probabilistic nature of localised rebar corrosion and the load-deformation behaviour. CACRCS Days 2020: Capacity Assessment of Corroded Reinforced Concrete Structures, online conference. 1–4 December 2020. https://doi.org/10.3929/ethz-b-000464554

56.* Häfliger S, Yilmaz D, **Angst U**, Kaufmann W. Corroded Tension Chord Model (CTCM) for concrete structures with locally corroded reinforcement. CACRCS Days 2020: Capacity Assessment of Corroded Reinforced Concrete Structures, online conference. 1–4 December 2020. https://doi.org/10.3929/ethz-b-000458172

55.* Zhang Z, **Angst U**. Modelling transport and precipitation of corrosion products in cementitious materials: A sensitivity analysis. The 7th International Symposium on Life-Cycle Civil Engineering (IALCCE 2020), Shangai, China / online conference. 27–30 October 2020.

54. Stefanoni M, Zhang Z, **Angst U**. Role of the concrete cover to suppress corrosion of steel in carbonated concrete. 74th RILEM Week and 40th Cement and Concrete Science Conference. Sheffield, UK / online conference. 31 August – 4 September 2020.

53. **Angst U**. Corrosion challenges in civil engineering infrastructures – examples from research at the corrosion laboratory at ETH Zurich. Swiss Corrosion Science Day, Thun, Switzerland, 3 March 2020.

52. **Angst U**. “Advances in Forecasting Reinforcing Steel Corrosion in Concrete". Invited lecture at the 2020 Gordon Research Conference (GRC) on Advanced Materials for Sustainable Infrastructure Development, 23–27 February 2020 Ventura, California, USA.

51. Vitaller AV, Elsener B, **Angst U**. Corrosion Analysis of Deep Geothermal Fluids in Switzerland. In: SCCER-SoE Annual Conference 2019, Lausanne, Switzerland, September 3–4 2019.

50. Martinelli-Orlando F, Shi W, **Angst U**. Investigation of pH and oxygen variations on steel structure under cathodic protection. In: EUROCORR 2019 (European Corrosion Congress), Seville, Spain, September 2019.

49. Boschmann Käthler C, **Angst U**, Elsener B. A database of critical chloride contents for fundamental understanding of corrosion initiation and service life modelling. In: EUROCORR 2019 (European Corrosion Congress), Seville, Spain, September 2019.

48. Vitaller AV, **Angst U**, Elsener B. Analysis of corrosion with electrochemical techniques applied to geothermal power plants in Switzerland. In: EUROCORR 2019 (European Corrosion Congress), Seville, Spain, September 2019.

47.* Michel L, Stefanoni M, **Angst U**. Local electrochemical characterization – A novel approach to study initiation of chloride induced corrosion in reinforced concrete structures. In: Proc. Int. Conf. for Durable Concrete for Infrastructure under Severe Conditions, Smart Admixtures, Self-responsiveness and Nano-additions (LORCENIS), Gent, Belgium, 10-11 September 2019. Publisher: Magnel Laboratory for Concrete Research.

46*. Femenias Y, **Angst U**. Novel sensor for non-destructive durability monitoring in reinforced concrete. Paper No. we.4.a.3. In: SMAR 2019 – 5th Conf. on Smart Monitoring, Assessment and Rehabilitation of Civil Structures. Potsdam, Germany, August 2019. Link to Proceedings

45*. Pfändler P, Bodie K, **Angst U**, Siegwart R. Flying corrosion inspection robot for corrosion monitoring of civil structures – First results. Paper No. we.4.a.6. In: SMAR 2019 – 5th Conf. on Smart Monitoring, Assessment and Rehabilitation of Civil Structures. Potsdam, Germany, August 2019. Link to Proceedings

44*. **Angst U**. Durable concrete structures: cracks & corrosion and corrosion & cracks. Keynote lecture and paper. Proc. 10th Int. Conf. on Fracture Mechanics of Concrete and Concrete Structures (FraMCoS-X), 24-26 June 2019, Bayonne, France. Eds. G. Pijaudier-Cabot, P. Grassl and C. La Borderie. doi:10.21012/FC10.233307

43*. Bodie K, Brunner M, Pantic M, Walser S, Pfändler P, **Angst U**, Siegwart R, Nieto J. An omnidirectional aerial manipulator for contact-based inspection, in: Proc. Int. Conf. 2019 Robotics: Science and Systems. 22-26 June 2019, Freiburg, Germany. https://arxiv.org/abs/1905.03502v2

42.* **Angst U**. Advances in durability monitoring of concrete structures, in: Proc. Int. Conf. Sustainable Materials, Systems and Structures (SMSS2019) – Durability, Monitoring and Repair of Structures, Eds. Baričević A, Rukavina MJ, Damjanović D, Guadagnini M. 20-22 March 2019, Rovinj, Croatia. RILEM Publications SARL. p. 572–579.

41.* Michel L, **Angst U**. Towards understanding corrosion initiation in concrete – Influence of local electrochemical properties of reinforcing steel, in: Int. Conf. on Concrete Repair, Rehabilitation and Retrofitting (ICCRRR). 10-12 November 2018, Cape Town, South Africa.

40.* Boschmann Käthler C, **Angst U**, Elsener B. Towards understanding corrosion initiation in concrete – influence of local concrete properties in the steel-concrete interfacial zone, in: Int. Conf. on Concrete Repair, Rehabilitation and Retrofitting (ICCRRR). 10-12 November 2018, Cape Town, South Africa.

39.* **Angst U**. The importance of the size effect in corrosion of steel in concrete for probabilistic service life modeling, in: Proc. Sixth International Symposium on Life-Cycle Civil Engineering, Eds. Caspeele R, Taerwe L, Frangopol DM. 28-31 October 2018, Ghent, Belgium.

38.* Zhang Z, **Angst U**, Michel A. A framework for modeling corrosion-related degradation in reinforced concrete, in: Proc. Sixth International Symposium on Life-Cycle Civil Engineering, Eds. Caspeele R, Taerwe L, Frangopol DM. 28-31 October 2018, Ghent, Belgium.

37.* Boschmann Käthler C, **Angst U**, Elsener B. Measuring critical chloride contents in structures and the influence on service life modeling, in: Proc. Sixth International Symposium on Life-Cycle Civil Engineering, Eds. Caspeele R, Taerwe L, Frangopol DM. 28-31 October 2018, Ghent, Belgium.

36. **Angst U**. Consequences due to unawareness of diffusion potentials in cathodic protection, in: EUROCORR 2018 (European Corrosion Congress), Krakow, Poland, September 2018.

35.* Stefanoni M, **Angst U**, Elsener B. Corrosion Challenges and Opportunities in Digital Fabrication of Reinforced Concrete, in: RILEM 1st International Conference on Concrete and Digital Fabrication. 10-12 September 2018, Zurich, Switzerland.

34. **Angst U**. Battling infrastructure corrosion. Keynote lecture at the "4th International Conference on Service Life Design for Infrastructures & RILEM week 2018". 26-29 August 2018, Delft, The Netherlands.

33. **Angst U**, Zhang Z. The steel-concrete interface and its ambiguous role in corrosion in concrete, in: Conference celebrating the Laboratory of Construction Materials (EPFL) Centennial and Karen Scrivener 60th Birthday, 19-22 August 2018, Lausanne, Switzerland.

32.* Zhang Z, **Angst U**, Michel A and Jensen MM, An image-based local homogenization method to model mass transport at the steel-concrete interface, in: Sixth Int. Conf. on the Durability of Concrete Structures, 18-20 July 2018, Leeds, UK.

31.* **Angst U**. Die Korrosion unserer Infrastruktur. Opening lecture at 3-Länder-Korrosionstagung (in German), 12. April 2018, Dübendorf, Switzerland.

30.* Femenias Y, **Angst U**, Elsener B. Durability monitoring of reinforced concrete. Paper No. 292. In: SMAR 2017 – 4th Conf. on Smart Monitoring, Assessment and Rehabilitation of Civil Structures. Zürich, Switzerland, September 2017. Link to paper

29.* Büchler M, **Angst U**, Ackland B. Cathodic protection criteria: a discussion of their historic evolution. In: EUROCORR 2017 (European Corrosion Congress), Prague, Czech Republic, September 2017.

28.* Boschmann Käthler C, **Angst U**, Larsen CK, Elsener B. Effect of cracks on chloride-induced corrosion of reinforcing steel in concrete. In: EUROCORR 2017 (European Corrosion Congress), Prague, Czech Republic, September 2017.

27. **Angst U**. Corrosion in Construction: Challenges and opportunities in corrosion of steel in concrete. Keynote lecture at International Conference on Advances in Construction Materials and Systems (ICACMS-2017) & RILEM week 2017, 3-8 September 2017, Chennai, India.

26.* **Angst U**. Forecasting the time to corrosion of reinforced concrete structures. The Corvallis Workshops – "Service Life Prediction of Concrete", July 16-19, 2017, Corvallis, Oregon, USA.

25.* Büchler M, Collet S, **Angst U**. The effect of coating defect distribution on buried steel pipelines on the effectiveness of cathodic protection. In: CEOCOR international Congress 2017 Luxembourg,17–18 May 2017.

24.* Bakalli M, Marazzani B, **Angst U**, Büchler M, Schlumpf J. Long-term field experience with an organic corrosion inhibitor demonstrating the potential to enhance the life of concrete structures. In: 45th Annual Convention of the Institute of Concrete Technology, Leeds, UK, 6 April 2017.

23.* Hornbostel K, **Angst U**, Elsener B, Larsen CK, Geiker MR. Correlation between mortar resistivity and the partial process (anodic, cathodic and ohmic) of macro-cell reinforcement corrosion. In: Proc. fib Symposium, Cape Town, South Africa, 21–23 November 2016.

22.* Büchler M, Ackland B, **Angst U**, The historic evolution of cathodic protection criteria. In: CEOCOR international Congress 2016 Ljubljana, Slovenia, 2016.

21.* **Angst U**. Chloride threshold values for corrosion initiation in concrete – a myth? **Keynote lecture** and paper. In: "Concrete Solutions - 6th Int. Conf. on Concrete Repair", Thessaloniki, Greece, 19-22 June 2016.

20.* Polder RB, **Angst U**, Pacheco J, Peelen WHA. Propagation of pitting corrosion of steel in concrete: conceptual models for local cross section loss. In: "Concrete Solutions - 6th Int. Conf. on Concrete Repair", Thessaloniki, Greece, 19-22 June 2016.

19.* Stefanoni M, **Angst U**, Elsener B. Innovative sample design for corrosion rate measurements in carbonated blended mortars. In: 11th International Concrete Sustainability Conference (2016 ICSC), Washington DC, 15–18 May 2016.

18.* **Angst U**, Elsener B. Chloride threshold values in concrete – a look back and ahead. ACI Fall Convention, Denver, Colorado, USA, 8-12 November 2015.

17.* **Angst U**, Büchler M. Corrosion rate measurements in concrete – a closer look at the linear polarization resistance method. In: 4th International Conference on Concrete Repair, Rehabilitation and Retrofitting (ICCRRR 2015), Leipzig, Germany, 05-07 October 2015.

16.* **Angst U**, Elsener B. Forecasting chloride-induced reinforcement corrosion in concrete – effect of realistic reinforcement steel surface conditions. In: 4th International Conference on Concrete Repair, Rehabilitation and Retrofitting (ICCRRR 2015), Leipzig, Germany, 05-07 October 2015.

15.* Femenias YS, **Angst U**, Elsener B. Monitoring chloride concentrations in concrete by means of Ag/AgCl ion-selective electrodes. In: 4th International Conference on Concrete Repair, Rehabilitation and Retrofitting (ICCRRR 2015), Leipzig, Germany, 05-07 October 2015.

14. **Angst U**, Elsener B. A critical analysis of proposed test methods for measuring the chloride threshold value in reinforced concrete. In: EUROCORR 2014 (European Corrosion Congress), Pisa, Italy, September 2014.

13.* Elsener B, **Angst U**, Leibbrandt A, Glauser O, Flatt RJ, Caprari G, Siegwart R. Climbing Robot for Corrosion Inspection and Monitoring of Reinforced and Post-tensioned Concrete Structures. In: Concrete Innovation Conference 2014 (CIC2014), Oslo, Norway, June, 2014.

12.* Geiker MR, De Weerdt K, Hornbostel K, Kioumarsi MM, Hendriks M, Larsen CK, **Angst U**. Prediction of reinforcement corrosion in concrete structures. In: Concrete Innovation Conference 2014 (CIC2014), Oslo, Norway, June, 2014.

11.* Elsener B, **Angst U**. Potenzialfeldmessung – von der Inspektion bis zum Bauwerksmanagement. In: 1. Brückenkolloquium – Beurteilung, Ertüchtigung und Instandsetzung von Brücken, Ostfildern/Stuttgart, Germany, June, 2014. (in German).

10.* Leibbrandt A, Caprari G, **Angst U**, Siegwart RY, Flatt RJ, Elsener B. Climbing robot for corrosion monitoring of reinforced concrete structures. In: 2nd International Conference on Applied Robotics for the Power Industry (CARPI), Zurich, Switzerland, 2012.

9.* Alonso MC, Sanchez M, **Angst U**, and Garcia-Calvo JL. The effect of binder type on chloride threshold values for reinforced concrete. In: Concrete Repair, Rehabilitation and Retrofitting II. Proc. 3nd Int. Conf. on Concrete Repair, Rehabilitation and Retrofitting (ICCRRR), Cape Town, South Africa, 2012.

8.* **Angst U**, Vennesland Ø, Larsen CK, and Elsener B. Chloride induced reinforcement corrosion: results from a laboratory study within the Norwegian COIN project. In: International Congress on Durability of Concrete, 18-21 June 2012, Trondheim, Norway. Eds: H. Justnes and S. Jacobsen, p. 116. ISBN 978-82-8208-031-6.

7.* Leibbrandt A, Caprari G, **Angst U**, Siegwart RY, Flatt RJ, and Elsener B. Climbing Robot for Corrosion Monitoring of Reinforced Concrete Structures. In: 2nd International Conference on Applied Robotics for the Power Industry, 11-13 September 2012, Zurich, Switzerland.

6.* **Angst U**, Vennesland Ø, Larsen CK, and Elsener B. Results from the Norwegian COIN project on chloride induced reinforcement corrosion in concrete. In: Nordic Concrete Research, Proceedings 21st NCR meeting, Helsinki, Finland. Norsk Betongforening, Oslo, 2011.

5.* **Angst U**, Elsener B, Larsen CK, and Vennesland Ø. Considerations on the effect of sample size for the critical chloride content in concrete. In: 2nd International Symposium on Service Life Design for Infrastructures, vol. 1. Eds: van Breugel K et al. RILEM Publications SARL, 2010, p. 569. ISBN 978-2-35158-096-7.

4.* **Angst U**, Larsen CK, Vennesland Ø, and Elsener B. Influence of casting direction on chloride-induced rebar corrosion. In: Concrete under Severe Conditions, Environment and Loading, Volume 1. Eds: Castro-Borges P et al. CRC Press, 2010, pp 359-366. ISBN 978-0-415-59316-8.

3.* **Angst U**, Larsen CK, Vennesland Ø, and Elsener B. Monitoring the chloride concentration in the concrete pore solution by means of direct potentiometry. In: Concrete Solutions, Proc. Int. Conf. on Concrete Solutions, Padua, Italy. Eds: Grantham M et al. CRC Press/Balkema, 2009, p. 401. ISBN 978-0-415-55082-6.

2.* **Angst U**, and Vennesland Ø. Critical chloride content in reinforced concrete – state of the art. In: Concrete Repair, Rehabilitation and Retrofitting II. Proc. 2nd Int. Conf. on Concrete Repair,

Rehabilitation and Retrofitting (ICCRRR), Cape Town, South Africa. Eds: Alexander MG et al. CRC Press/Balkema, The Netherlands, 2008, p. 149. ISBN 978-0-415-46850-3.

1.* **Angst U**, Vennesland Ø, Larsen CK, and Elsener B. Critical chloride content for corrosion in reinforced concrete. In: Nordic Concrete Research, Proceedings 20th NCR meeting, Bålsta, Sweden. Norsk Betongforening, Oslo, 2008, p. 52. ISBN 978-82-8208-007-1.

Invited lectures and seminars

(12.) Angst U. “Size effects in corrosion of steel in concrete”. **Invited plenary lecture** at the 2nd Int. Conf. on Construction Materials for a Sustainable Future (CoMS 2020), Bled, Slovenia. Postponed to spring 2021 due to COVID-19

11. Angst U. Corrosion and how it can limit the life of reinforced concrete. **Invited lecture** at the Int. Conference on “Rethinking Concrete – Material Conventions in the Anthropocene, 22-23 October 2020, Princeton University, School of Architecture. Online conference.

[–] Angst U. “Corrosion in Porous Media". **Invited lecture** at the 2020 Gordon Research Conference (GRC) on Aqueous Corrosion, 12-17 July 2020, Colby-Sawyer College, New London, USA. Cancelled due to COVID-19

10. Angst U. “Advances in Forecasting Reinforcing Steel Corrosion in Concrete". **Invited lecture** at the 2020 Gordon Research Conference (GRC) on Advanced Materials for Sustainable Infrastructure Development, 23-27 February 2020 Ventura, California, USA.

9. Angst U. “Durable concrete structures: cracks & corrosion and corrosion & cracks”. **Keynote lecture** at the 10th International Conference on Fracture Mechanics of Concrete and Concrete Structures (FraMCoS-X), 24-26 June 2019, Bayonne, France.

8. Angst U. “Size effects in corrosion of steel in concrete”. **Seminar** at the Department of Civil and Environmental Engineering, Imperial College, London, UK. 20 June 2019.

7. Angst U. “Corrosion of steel in concrete – challenges and opportunities”. **Seminar** at the Electrochemistry Laboratory (LEC) at the Paul-Scherrer Institute (PSI), Villigen, Switzerland. 6 March 2019.

6. Angst U. “Corrosion of steel in concrete – challenges and opportunities”. **Seminar** at the Dep. of Materials Science & Engineering, University of Virginia, Charlottesville, USA. 11 October 2018.

5. Angst U. “Battling infrastructure corrosion". **Keynote lecture** at the “4th International Conference on Service Life Design for Infrastructures & RILEM week 2018”. 26-29 August 2018, Delft, The Netherlands.

4. Angst U. “Die Korrosion unserer Infrastruktur". **Opening lecture** at 3-Länder-Korrosionstagung (in German), 12. April 2018, Dübendorf, Switzerland.

3. Angst U. “Corrosion in Construction: Challenges and opportunities in corrosion of steel in concrete". **Keynote lecture** at “International Conference on Advances in Construction Materials and Systems (ICACMS-2017) & RILEM week 2017, 3-8 September 2017, Chennai, India. Watch online: https://www.youtube.com/watch?v=dfmxrEqvhZc

2. Angst U. “Forecasting the time to corrosion of reinforced concrete structures". **Invited lecture** at “The Corvallis Workshops – Service Life Prediction of Concrete”, July 16-19, 2017, Corvallis, Oregon, USA.

1. Angst U. “Chloride threshold values for corrosion initiation in concrete – a myth?" **Keynote lecture** at "Concrete Solutions – 6th Int. Conf. on Concrete Repair", Thessaloniki, Greece, 19-22 June 2016.