

REFERENCES

- [1] F. Hveem, H. Davis, Some Concepts Concerning Triaxial Compression Testing of Asphaltic Paving Mixtures and Subgrade Materials, in: Triaxial Testing of Soils and Bituminous Mixtures, ASTM International, 1951: pp. 25–30. <https://doi.org/10.1520/STP48406S>.
- [2] Y. Kumbargeri, K. Biligiri, Understanding Aging Behaviour of Conventional Asphalt Binders Used in India, Transportation Research Procedia. 17 (2016) 282–290. <https://doi.org/10.1016/j.trpro.2016.11.094>.
- [3] G.D. Airey, Rheological evaluation of ethylene vinyl acetate polymer modified bitumens, Constr Build Mater. 16 (2002) 473–487. <https://doi.org/https://doi.org/10.1016/j.trpro.2016.11.094>.
- [4] U. Isacson, X. Lu, Testing and appraisal of polymer modified road bitumens—state of the art, Mater Struct. 28 (1995) 139–159. <https://doi.org/10.1007/BF02473221>.
- [5] PS Pell, Fatigue characteristics of bitumen and bituminous mixes, in: International Conference on the Structural Design of Asphalt Pavements, 1962.
- [6] H. Di Benedetto, C. De La Roche, H. Baaj, A. Pronk, R. Lundstrom, Fatigue of bituminous mixtures, Mater Struct. 37 (2004) 202–216.
- [7] Z. Wu, L. Mohammad, L. Wang, MA Mull, Fracture resistance characterization of superpave mixtures using the semi-circular bending test, J ASTM Int. 2 (2005) 1–15. <https://doi.org/10.1520/JAI12264>.
- [8] V. Garcia, L. Barros, J. Garibay, I. Abdallah, S. Nazarian, Effect of Aggregate Gradation on Performance of Asphalt Concrete Mixtures, Journal of Materials in Civil

- Engineering. 32 (2020) 04020102. [https://doi.org/10.1061/\(ASCE\)MT.1943-5533.0003147](https://doi.org/10.1061/(ASCE)MT.1943-5533.0003147).
- [9] V. Antunes, A. Freire, L. Quaresma, R. Micaelo, Influence of the geometrical and physical properties of filler in the filler–bitumen interaction, *Constr Build Mater.* 76 (2015) 322–329. <https://doi.org/https://doi.org/10.1016/j.conbuildmat.2014.12.008>.
- [10] W. Grabowski, J. Wilanowicz, The structure of mineral fillers and their stiffening properties in filler-bitumen mastics, *Mater Struct.* 41 (2008) 793–804. <https://doi.org/10.1617/S11527-007-9283-4>.
- [11] B. Prowell, J. Zhang, E. Brown, Aggregate properties and the performance of superpave-designed hot mix asphalt, in: *Transportation Research Board*, 2005: p. 539.
- [12] F. Roberts, P. Kandhal, E. Brown, D. Lee, *Hot mix asphalt materials, mixture design and construction*, (1991).
- [13] A.R. Pasandín, I. Pérez, The influence of the mineral filler on the adhesion between aggregates and bitumen, *Int J Adhes Adhes.* 58 (2015) 53–58. <https://doi.org/10.1016/j.ijadhadh.2015.01.005>.
- [14] A. Diab, M. Enieb, Investigating influence of mineral filler at asphalt mixture and mastic scales, *International Journal of Pavement Research and Technology.* 11 (2018) 213–224. <https://doi.org/10.1016/j.ijprt.2017.10.008>.
- [15] Y. Kim, D. Allen, D. Little, Computational Constitutive Model for Predicting Nonlinear Viscoelastic Damage and Fracture Failure of Asphalt Concrete Mixtures, *International Journal of Geomechanics.* 7 (2007) 102–110. [https://doi.org/10.1061/\(ASCE\)1532-3641\(2007\)7:2\(102\)](https://doi.org/10.1061/(ASCE)1532-3641(2007)7:2(102)).

- [16] L. Pereira, A. Freire, M. da Costa, V. Antunes, L. Quaresma, R. Micaelo, Experimental study of the effect of filler on the ductility of filler-bitumen mastics, *Constr Build Mater.* 189 (2018) 1045–1053. <https://doi.org/10.1016/j.conbuildmat.2018.09.063>.
- [17] M. Hospodka, B. Hofko, R. Blab, Introducing a new specimen shape to assess the fatigue performance of asphalt mastic by dynamic shear rheometer testing, *Mater Struct.* 51 (2018) 46. <https://doi.org/10.1617/s11527-018-1171-6>.
- [18] B. Smith, S. Hesp, Crack Pinning in Asphalt Mastic and Concrete: Regular Fatigue Studies, *Transp Res Rec.* 1728 (2000) 75–81. <https://doi.org/10.3141/1728-11>.
- [19] R. Micaelo, A. Guerra, L. Quaresma, M.T. Cidade, Study of the effect of filler on the fatigue behaviour of bitumen-filler mastics under DSR testing, *Constr Build Mater.* 155 (2017) 228–238. <https://doi.org/10.1016/j.conbuildmat.2017.08.066>.
- [20] R. Miró, A.H. Martínez, F.E. Pérez-Jiménez, R. Botella, A. Álvarez, Effect of filler nature and content on the bituminous mastic behaviour under cyclic loads, *Constr Build Mater.* 132 (2017) 33–42. <https://doi.org/10.1016/j.conbuildmat.2016.11.114>.
- [21] J. Zhang, P. Li, M. Liang, H. Jiang, Z. Yao, X. Zhang, S. Yu, Utilization of red mud as an alternative mineral filler in asphalt mastics to replace natural limestone powder, *Constr Build Mater.* 237 (2020) 117821. <https://doi.org/10.1016/j.conbuildmat.2019.117821>.
- [22] F. Frigio, G. Ferrotti, F. Cardone, Fatigue Rheological Characterization of Polymer-Modified Bitumens and Mastics, in: 8th RILEM International Symposium on Testing and Characterization of Sustainable and Innovative Bituminous Materials. Springer, Dordrecht, 2016, 2016. <https://doi.org/10.1007/978-94-017-7342-3>.

- [23] A. Colares, A. Faxina, F. Luisa, G. Grecco, Effects of filler / bitumen ratio and bitumen grade on rutting and fatigue characteristics of bituminous mastics, in: 6th Eurasphalt & Eurobitume Congress, Prague. , 2016.
- [24] G. Mazzoni, A. Stimilli, F. Cardone, F. Canestrari, Fatigue, self-healing and thixotropy of bituminous mastics including aged modified bitumens and different filler contents, *Constr Build Mater.* 131 (2017) 496–502. <https://doi.org/10.1016/j.conbuildmat.2016.11.093>.
- [25] X. Zhu, Y. Sun, C. Du, W. Wang, J. Liu, J. Chen, Rutting and fatigue performance evaluation of warm mix asphalt mastic containing high percentage of artificial RAP binder, *Constr Build Mater.* 240 (2020) 117860. <https://doi.org/10.1016/j.conbuildmat.2019.117860>.
- [26] R. Micaelo, R. Botella, F. Pérez-jiménez, M. Sá, Analysis of the ageing effect on the cyclic tension – compression loading behaviour of bitumen and mastics, *Constr Build Mater.* 243 (2020) 118275. <https://doi.org/10.1016/j.conbuildmat.2020.118275>.
- [27] G. Peebles, Y. Mehta, A. Nolan, R. Dusseau, Fatigue Behavior of Neat and Polymer Modified Binders and Mastics, *Sustainable and Efficient Pavements.* (2013) 933–942. <https://doi.org/https://doi.org/10.1061/9780784413005.077>.
- [28] Y. Kim, D. Little, I. Song, Effect of Mineral Fillers on Fatigue Resistance and Fundamental Material Characteristics: Mechanistic Evaluation, in: *Transp Res Rec*, National Research Council, 2003: pp. 1–8. <https://doi.org/10.3141/1832-01>.
- [29] Q. Xiao, C. Qian, JG Xie, Experimental research on modification of asphalt concrete performance and asphalt-aggregate interface by coupling agent, *Journal of Southeast University.* 34 (2004) 485–489.

- [30] M.Z. Alavi, E.Y. Hajj, P.E. Sebaaly, A comprehensive model for predicting thermal cracking events in asphalt pavements, *International Journal of Pavement Engineering*. 18 (2017) 871–885. <https://doi.org/10.1080/10298436.2015.1066010>.
- [31] L. Babadopulos, J. Ferreira, J. Soares, L. Nascimento, V. Castelo Branco, Aging-Effect Incorporation into the Fatigue-Damage Modeling of Asphalt Mixtures Using the S-VECD Model, *Journal of Materials in Civil Engineering*. 28 (2016) 04016161. [https://doi.org/10.1061/\(ASCE\)MT.1943-5533.0001676](https://doi.org/10.1061/(ASCE)MT.1943-5533.0001676).
- [32] R. Mallick, R. Pelland, F. Hugo, Use of accelerated loading equipment for determination of long term moisture susceptibility of hot mix asphalt, *International Journal of Pavement Engineering*. 6 (2005) 125–136. <https://doi.org/10.1080/10298430500158984>.
- [33] Y. Tan, M Guo, Micro-and nano-characteration of interaction between asphalt and filler, *J Test Eval*. 42 (2014) 1089–1097. <https://doi.org/https://doi.org/10.1520/JTE20130253>.
- [34] G. Liu, Y. Zhao, J. Zhou, J. Li, T. Yang, J. Zhang, Applicability of evaluation indices for asphalt and filler interaction ability, *Constr Build Mater*. 148 (2017) 599–609. <https://doi.org/https://doi.org/10.1016/j.conbuildmat.2017.05.089>.
- [35] G.G. Al-khateeb, M.F. Irfaeya, T.S. Khedaywi, A new simplified micromechanical model for asphalt mastic behavior, *Constr Build Mater*. 149 (2017) 587–598. <https://doi.org/10.1016/j.conbuildmat.2017.05.129>.
- [36] W.G. Buttlar, Z. You, Discrete element modeling of asphalt concrete: Microfabric approach, *Transp Res Rec*. (2001) 111–118. <https://doi.org/10.3141/1757-13>.

- [37] J. Ren, Z. Liu, J. Xue, Y. Xu, Influence of the Mesoscopic Viscoelastic Contact Model on Characterizing the Rheological Behavior of Asphalt Concrete in the DEM Simulation, *Advances in Civil Engineering*. 2020 (2020). <https://doi.org/10.1155/2020/5248267>.
- [38] P. Cundall, S. ODL, Numerical experiments on granular assemblies; measurements and observations, *Deformation and Failure of Granular Materials*. (1982) 355–370.
- [39] PA Cundall, Distinct element models of rock and soil structure, *Analytical and Computational Methods in Engineering Rock Mechanics*. (1987) 129–163.
- [40] P. Apostolidis, C. Kasbergen, A. Bhasin, A. Scarpas, S. Erkens, Study of asphalt binder fatigue with a new dynamic shear rheometer geometry, *Transp Res Rec*. 2672 (2018) 290–300. <https://doi.org/10.1177/0361198118781378>.
- [41] F. Safaei, C. Castorena, Improved interpretation of asphalt binder parallel plate dynamic shear rheometer fatigue tests, *International Journal of Pavement Engineering*. 21 (2020) 74–87. <https://doi.org/10.1080/10298436.2018.1438611>.
- [42] S.S. Hung, F. Farshidi, D. Jones, J.T. Harvey, Comparison of concentric cylinder and parallel plate geometries for asphalt binder testing with a dynamic shear rheometer, *Transp Res Rec*. 2505 (2015) 108–114. <https://doi.org/10.3141/2505-14>.
- [43] F. Michel, L. Courard, Particle size distribution of limestone fillers: Granulometry and specific surface area investigations, *Particulate Science and Technology*. 32 (2014) 334–340. <https://doi.org/10.1080/02726351.2013.873503>.
- [44] J. Choudhary, B. Kumar, A. Gupta, Application of waste materials as fillers in bituminous mixes, *Waste Management*. 78 (2018) 417–425. <https://doi.org/10.1016/j.wasman.2018.06.009>.

- [45] R. Taylor, Surface interactions between bitumen and mineral fillers and their effects on the rheology of bitumen-filler mastics (Doctoral dissertation), University of Nottingham, 2007.
- [46] P. Apostolidis, C. Kasbergen, A. Bhasin, A. Scarpas, S. Erkens, Study of asphalt binder fatigue with a new dynamic shear rheometer geometry, *Transp Res Rec.* 2672 (2018) 290–300. <https://doi.org/10.1177/0361198118781378>.
- [47] W. Martono, ; H U Bahia, J. D'angelo, Effect of Testing Geometry on Measuring Fatigue of Asphalt Binders and Mastics, (2007). <https://doi.org/10.1061/ASCE0899-1561200719:9746>.
- [48] C. Koh, G. Lopp, R. Roque, Development of a dog-bone direct tension test (DBDT) for asphalt concrete, *Advanced Testing and Characterization of Bituminous Materials.* (2009) 601–612.
- [49] E. Hesami, A. Ghafar, B. Birgisson, N. Kringos, Multi-scale characterization of asphalt mastic rheology, in: *Multi-Scale Modeling and Characterization of Infrastructure Materials*, Springer Netherlands, 2013: pp. 45–61. https://doi.org/10.1007/978-94-007-6878-9_4.
- [50] X. Zhu, Y. Sun, C. Du, W. Wang, J. Liu, J. Chen, Rutting and fatigue performance evaluation of warm mix asphalt mastic containing high percentage of artificial RAP binder, *Constr Build Mater.* 240 (2020) 117860. <https://doi.org/https://doi.org/10.1016/j.conbuildmat.2019.117860>.
- [51] A. Modarres, H. Ramyar, P. Ayar, Effect of cement kiln dust on the low-temperature durability and fatigue life of hot mix asphalt, *Cold Reg Sci Technol.* 110 (2015) 59–66. <https://doi.org/https://doi.org/10.1016/j.coldregions.2014.11.010>.

- [52] T. Kütük-Sert, S. Kütük, Physical and Marshall Properties of Borogypsum Used as Filler Aggregate in Asphalt Concrete, *Journal of Materials in Civil Engineering*. 25 (2013) 266–273. [https://doi.org/10.1061/\(ASCE\)MT.1943-5533.0000580](https://doi.org/10.1061/(ASCE)MT.1943-5533.0000580).
- [53] M. Chen, J. Lin, S. Wu, C. Liu, Utilization of recycled brick powder as alternative filler in asphalt mixture, *Constr Build Mater*. 25 (2011) 1532–1536. <https://doi.org/10.1016/j.conbuildmat.2010.08.005>.
- [54] S. Wu, J. Zhu, J. Zhong, D. Wang, Experimental investigation on related properties of asphalt mastic containing recycled red brick powder, *Constr Build Mater*. 25 (2011) 2883–2887. <https://doi.org/10.1016/j.conbuildmat.2010.12.040>.
- [55] G. Qian, S. Bai, S. Ju, T. Huang, Laboratory evaluation on recycling waste phosphorus slag as the mineral filler in hot-mix asphalt, *Journal of Materials in Civil Engineering*. 25 (2013) 846–850. [https://doi.org/10.1061/\(ASCE\)MT.1943-5533.0000770](https://doi.org/10.1061/(ASCE)MT.1943-5533.0000770).
- [56] A. Nassar, M. Mohammed, N. Thom, T. Parry, Mechanical, durability and microstructure properties of Cold Asphalt Emulsion Mixtures with different types of filler, *Constr Build Mater*. 114 (2016) 352–363. <https://doi.org/10.1016/j.conbuildmat.2016.03.112>.
- [57] S. Chandra, R. Choudhary, Performance characteristics of bituminous concrete with industrial wastes as filler, *Journal of Materials in Civil Engineering*. 25 (2013) 1666–1673. [https://doi.org/10.1061/\(ASCE\)MT.1943-5533.0000730](https://doi.org/10.1061/(ASCE)MT.1943-5533.0000730).
- [58] N. Katamine, Phosphate waste in mixtures to improve their deformation, *J Transp Eng*. 126 (2000) 382–389. [https://doi.org/10.1061/\(ASCE\)0733-947X\(2000\)126:5\(382\)](https://doi.org/10.1061/(ASCE)0733-947X(2000)126:5(382)).

- [59] A. Modarres, M. Rahmanzadeh, Application of coal waste powder as filler in hot mix asphalt, *Constr Build Mater.* 66 (2014) 476–483. <https://doi.org/https://doi.org/10.1016/j.conbuildmat.2014.06.002>.
- [60] B. Huang, Q. Dong, E. Burdette, Laboratory evaluation of incorporating waste ceramic materials into Portland cement and asphaltic concrete, *Constr Build Mater.* 23 (2009) 3451–3456. <https://doi.org/https://doi.org/10.1016/j.conbuildmat.2009.08.024>.
- [61] R. Melotti, E. Santagata, M. Bassani, M. Salvo, S. Rizzo, A preliminary investigation into the physical and chemical properties of biomass ashes used as aggregate fillers for bituminous mixtures, *Waste Management.* 33 (2013) 1906–1917. <https://doi.org/10.1016/j.wasman.2013.05.015>.
- [62] K. Moon, A. Falchetto, J. Park, J. Jeong, Development of High Performance Asphalt Mastic using Fine Taconite Filler, *KSCE Journal of Civil Engineering.* 18 (2014) 1679–1687. <https://doi.org/10.1007/s12205-014-1207-6>.
- [63] C. Sangiorgi, P. Tataranni, A. Simone, V. Vignali, Assessment of waste bleaching clay as alternative filler for the production of porous asphalts, *Constr Build Mater.* 109 (2016) 1–7. <https://doi.org/https://doi.org/10.1016/j.conbuildmat.2016.01.052>.
- [64] D. Lin, J. Lin, S. Chen, The application of baghouse fines in Taiwan, *Resour Conserv Recycl.* 46 (2006) 281–301.
- [65] M. Karaşahin, S. Terzi, Evaluation of marble waste dust in the mixture of asphaltic concrete, *Constr Build Mater.* 21 (2007) 616–620. <https://doi.org/https://doi.org/10.1016/j.conbuildmat.2005.12.001>.

- [66] C. Gürer, S. Çetin, H. Akbulut, A. Elmacı, Investigation of using granite sludge as filler in bituminous hot mixtures, *Constr Build Mater.* 36 (2012) 430–436. <https://doi.org/10.1016/j.conbuildmat.2012.04.069>.
- [67] Q. Liu, S. Wu, E. Schlangen, Induction heating of asphalt mastic for crack control, *Constr Build Mater.* 41 (2013) 345–351. <https://doi.org/10.1016/j.conbuildmat.2012.11.075>.
- [68] A. Tenza-Abril, J. Saval, A. Cuenca, Using sewage-sludge ash as filler in bituminous mixes, *Journal of Materials in Civil Engineering.* 27 (2015). [https://doi.org/10.1061/\(ASCE\)MT.1943-5533.0001087](https://doi.org/10.1061/(ASCE)MT.1943-5533.0001087).
- [69] Y. Xue, H. Hou, S. Zhu, J. Zha, Utilization of municipal solid waste incineration ash in stone mastic asphalt mixture: pavement performance and environmental impact, *Constr Build Mater.* 23 (2009) 989–996. <https://doi.org/https://doi.org/10.1016/j.conbuildmat.2008.05.009>.
- [70] J. Yi, Y. Cao, D. Feng, Y. Huang, Characterization of zirconium tungstate filler and performance investigation on asphalt mastic made with zirconium tungstate filler, *Constr Build Mater.* 125 (2016) 387–397. <https://doi.org/https://doi.org/10.1016/j.conbuildmat.2016.08.074>.
- [71] R. Muniandy, E. Aburkaba, R. Taha, Effect of mineral filler type and particle size on the engineering properties of stone mastic asphalt pavements, *The Journal of Engineering Research [TJER].* 10 (2013) 13–32. <https://doi.org/https://doi.org/10.24200/tjer.vol10iss2pp13-32>.
- [72] F. Giustozzi, K. Mansour, F. Patti, M Pannirselvam, Shear rheology and microstructure of mining material-bitumen composites as filler replacement in asphalt mastics, *Constr*

- Build Mater. 171 (2018) 726–735.
<https://doi.org/https://doi.org/10.1016/j.conbuildmat.2018.03.190>.
- [73] H. Rondón-Quintana, J. Ruge-Cárdenas, D. Patiño-Sánchez, H. Vacca-Gamez, F. Reyes-Lizcano, M. Muniz de Farias, Blast Furnace Slag as a Substitute for the Fine Fraction of Aggregates in an Asphalt Mixture, *Journal of Materials in Civil Engineering*. 30 (2018) 04018244. [https://doi.org/10.1061/\(ASCE\)MT.1943-5533.0002409](https://doi.org/10.1061/(ASCE)MT.1943-5533.0002409).
- [74] M. Arabani, S.A. Tahami, M. Taghipoor, Laboratory investigation of hot mix asphalt containing waste materials, *Road Materials and Pavement Design*. 18 (2016) 713–729. <https://doi.org/10.1080/14680629.2016.1189349>.
- [75] H. Do, P. Mun, A study on engineering characteristics of asphalt concrete using filler with recycled waste lime, *Waste Management*. 28 (2008) 191–199.
- [76] I. Asi, A. Assa'ad, Effect of Jordanian oil shale fly ash on asphalt mixes, *Journal of Materials in Civil Engineering*. 17 (2005) 553–559. [https://doi.org/10.1061/\(ASCE\)0899-1561\(2005\)17:5\(553\)](https://doi.org/10.1061/(ASCE)0899-1561(2005)17:5(553)).
- [77] P. Kandhal, C. Lynn, F. Parker, Characterization tests for mineral fillers related to performance of asphalt paving mixtures, *Transp Res Rec*. 1638 (1998) 101–110. <https://doi.org/10.3141/1638-12>.
- [78] A. Simone, F. Mazzotta, S. Eskandarsefat, C. Sangiorgi, V. Vignali, C. Lantieri, G. Dondi, Experimental application of waste glass powder filler in recycled dense-graded asphalt mixtures, *Road Materials and Pavement Design*. 20 (2019) 592–607. <https://doi.org/10.1080/14680629.2017.1407818>.

- [79] S. Chandra, R. Choudhary, Performance characteristics of bituminous concrete with industrial wastes as filler, *Journal of Materials in Civil Engineering*, 25 (2013) 1666–1673. [https://doi.org/10.1061/\(ASCE\)MT.1943-5533.0000730](https://doi.org/10.1061/(ASCE)MT.1943-5533.0000730).
- [80] A. Rana, P. Kalla, L. Csetenyi, Recycling of dimension limestone industry waste in concrete, *Int J Min Reclam Environ*, 31 (2017) 231–250. <https://doi.org/10.1080/17480930.2016.1138571>.
- [81] A.R. Copeland, Influence of moisture on bond strength of asphalt-aggregate systems (Doctoral dissertation), Vanderbilt University, 2007.
- [82] M. Mazumder, R. Ahmed, A. Wajahat, S. Lee, SEM and ESEM techniques used for analysis of asphalt binder and mixture : A state of the art review, *Constr Build Mater*, 186 (2018) 313–329. <https://doi.org/10.1016/j.conbuildmat.2018.07.126>.
- [83] J. Petersen, Chemical composition of asphalt as related to asphalt durability: State of the Art, *Transp Res Rec*, 999 (1984) 13–30.
- [84] J. Romberg, S. Nesmith, R. Traxler, Some Chemical Aspects of the Components of Asphalt, *J Chem Eng Data*, 4 (1959) 159–161. <https://doi.org/10.1021/JE60002A014>.
- [85] M. Liao, Small and Large Strain Rheological and Fatigue Characterisation of Bitumen-Filler Mastics (Doctoral dissertation), University of Nottingham, 2007.
- [86] N. Saboo, P. Kumar, Use of flow properties for rheological modeling of bitumen, *International Journal of Pavement Research and Technology*, 9 (2016) 63–72. <https://doi.org/10.1016/j.ijprt.2016.01.005>.
- [87] F. Tahmoorian, B. Samali, J. Yeaman, Evaluation of structural and thermal properties of rubber and HDPE for utilization as binder modifier, *Modified Asphalt*, 109 (2018) 109–127.

- [88] R. Tauste, Understanding the bitumen ageing phenomenon : A review, *Constr Build Mater.* 192 (2018) 593–609. <https://doi.org/10.1016/j.conbuildmat.2018.10.169>.
- [89] N. Saboo, Strength characteristics of polymer modified asphalt binders and mixes (Doctoral dissertation), Indian Institute of Technology Roorkee., 2015.
- [90] C. Glover, A. Martin, A. Chowdhury, R. Han, N. Prapaitrakul, X. Jin, J. Lawrence, Evaluation of binder aging and its influence in aging of hot mix asphalt concrete: literature review and experimental design, 2009.
- [91] J. Read, D. Whiteoak, *The shell bitumen handbook*, 2003.
- [92] G. Airey, Rheological characteristics of polymer modified and aged bitumens (Doctoral dissertation), University of Nottingham, 1997.
- [93] N. Yusoff, M. Shaw, G. Airey, Modelling the linear viscoelastic rheological properties of bituminous binders, *Constr Build Mater.* 25 (2011) 2171–2189. <https://doi.org/https://doi.org/10.1016/j.conbuildmat.2010.11.086>.
- [94] D. Anderson, T. Kennedy, Development of SHRP binder specification (with discussion), *Journal of the Association of Asphalt Paving Technologists.* 62 (1993).
- [95] T. Kennedy, G. Huber, E. Harrigan, R. Cominsky, C. Hughes, H. Quintus, J. Moulthrop, *Superior Performing Asphalt Pavements (Superpave): The Product of the SHRP Asphalt Research Program*, 1994.
- [96] D. Jones, W. Thomas, P. Kennedy, The asphalt model: Results of the SHRP Asphalt Research Program, *Transportation Research Board VTI Rapport A .* 372 (1991) 83–90.
- [97] J. Chen, C. Tsai, How good are linear viscoelastic properties of asphalt binder to predict rutting and fatigue cracking?, *J Mater Eng Perform.* 8 (1999) 443–449. <https://doi.org/10.1361/105994999770346747>.

- [98] J. Wang, T. Wang, X. Hou, F. Xiao, Modelling of rheological and chemical properties of asphalt binder considering SARA fraction, *Fuel*. 238 (2019) 320–330. <https://doi.org/10.1016/j.fuel.2018.10.126>.
- [99] F. Wang, Y. Xiao, P. Cui, J. Lin, M. Li, Z. Chen, Correlation of asphalt performance indicators and aging Degrees: A review, *Constr Build Mater*. 250 (2020) 118824. <https://doi.org/10.1016/j.conbuildmat.2020.118824>.
- [100] A. Mansourkhaki, M. Ameri, D. Daryaei, Application of different modifiers for improvement of chemical characterization and physical-rheological parameters of reclaimed asphalt binder, *Constr Build Mater*. 203 (2019) 83–94. <https://doi.org/10.1016/j.conbuildmat.2019.01.086>.
- [101] M. Notani, F. Moghadas Nejad, E. Fini, P. Hajikarimi, Low-Temperature Performance of Toner-Modified Asphalt Binder, *Journal of Transportation Engineering Part B: Pavements*. 145 (2019) 1–9. <https://doi.org/10.1061/JPEODX.0000123>.
- [102] S. Ghanoon, J. Tanzadeh, Laboratory evaluation of nano-silica modification on rutting resistance of asphalt Binder, *Constr Build Mater*. 223 (2019) 1074–1082. <https://doi.org/10.1016/j.conbuildmat.2019.07.295>.
- [103] M. Guo, M. Liang, Y. Jiao, W. Zhao, Y. Duan, H. Liu, A review of phase change materials in asphalt binder and asphalt mixture, *Constr Build Mater*. 258 (2020) 119565. <https://doi.org/10.1016/j.conbuildmat.2020.119565>.
- [104] S. Karnati, D. Oldham, E. Fini, L. Zhang, Surface functionalization of silica nanoparticles to enhance aging resistance of asphalt binder, *Constr Build Mater*. 211 (2019) 1065–1072. <https://doi.org/10.1016/j.conbuildmat.2019.03.257>.

- [105] C. Carl, P. Lopes, M. da Costa, GC Falla, Comparative study of the effect of long-term ageing on the behaviour of bitumen and mastics with mineral fillers, *Constr Build Mater.* 225 (2019) 76–89.
- [106] U. Mannan, R. Tarefder, Evaluation of Fatigue Damage and Healing of Asphalt Mastics for Different Filler Contents, *Canadian Journal of Civil Engineering.* 46 (2019) 494–500.
- [107] F. Safaei, C. Castorena, Y. Kim, Linking asphalt binder fatigue to asphalt mixture fatigue performance using viscoelastic continuum damage modeling, *Mech Time Depend Mater.* 20 (2016) 299–323. <https://doi.org/10.1007/s11043-016-9304-1>.
- [108] C. Wang, C. Castorena, J. Zhang, Y. Kim, Unified failure criterion for asphalt binder under cyclic fatigue loading, *Road Materials and Pavement Design.* 16 (2015) 125–148. <https://doi.org/10.1080/14680629.2015.1077010>.
- [109] C. Clopotel, R. Velasquez, H. Bahia, Measuring physico-chemical interaction in mastics using glass transition, *Road Materials and Pavement Design.* 13 (2012) 304–320. <https://doi.org/10.1080/14680629.2012.657095>.
- [110] B. Underwood, Y. Kim, Experimental investigation into the multiscale behaviour of asphalt concrete, *International Journal of Pavement Engineering.* 12 (2011) 357–370. <https://doi.org/10.1080/10298436.2011.574136>.
- [111] J. Pei, Z. Fan, P. Wang, J. Zhang, B. Xue, R Li, Micromechanics prediction of effective modulus for asphalt mastic considering inter-particle interaction, *Constr Build Mater.* 101 (2015) 209–216.
- [112] F. Li, Y. Yang, L. Wang, The interfacial interaction between asphalt binder and mineral filler: a comprehensive review on mechanisms, evaluation methods and influence

- factors, *International Journal of Pavement Engineering*. (2021) 1–15.
<https://doi.org/10.1080/10298436.2021.1942468>.
- [113] L. Johansson, U. Isacson, Effect of filler on low temperature physical hardening of bitumen, *Constr Build Mater*. 12 (1998) 463–470.
[https://doi.org/https://doi.org/10.1016/S0950-0618\(98\)00028-2](https://doi.org/https://doi.org/10.1016/S0950-0618(98)00028-2).
- [114] G. Airey, M. Liao, Fatigue behaviour of bitumen-filler mastics, 10th International Conference on Asphalt Pavements-August 12 To 17, 2006, Quebec City, Canada. (2006).
- [115] J. Zhang, X. Li, G. Liu, J. Pei, Effects of material characteristics on asphalt and filler interaction ability, *International Journal of Pavement Engineering*. 8436 (2017) 1–10.
<https://doi.org/10.1080/10298436.2017.1366765>.
- [116] B. Harris, K. Stuart, Analysis of mineral fillers and mastics used in stone matrix asphalt, *Asphalt Paving Technology*. 64 (1995) 54–95.
- [117] N. Shashidhar, R. Pedro, Factors Affecting the Stiffening Potential of Mineral Fillers, *Transp Res Rec*. 1638 (1998) 94–100.
- [118] W. Buttlar, D. Bozkurt, G. Al-Khateeb, A. Waldhoff, Understanding asphalt mastic behavior through micromechanics, *Transp Res Rec*. (1999) 157–169.
<https://doi.org/10.3141/1681-19>.
- [119] M. Mitchell, R. Link, J. Wu, G. Airey, The Influence of Aggregate Interaction and Aging Procedure on Bitumen Aging, *J Test Eval*. 37 (2009) 000133.
<https://doi.org/10.1520/jte000133>.
- [120] L. Song-tao, L. Zhaohui, X. Juan, Fatigue performance of aging asphalt mixtures, *Polimery*. 60 (2015) 126–131. <https://doi.org/10.14314/polimery.2015.126>.

- [121] X. Li, A. Zofka, M. Marasteanu, Evaluation of field aging effects on asphalt binder properties, *Road Materials and Pavement Design*. 7 (2006) 57–73. <https://doi.org/10.1080/14680629.2006.9690058>.
- [122] R. Miró Recasens, A. Martínez, F. Pérez Jiménez, Effect of Filler on the Aging Potential of Asphalt Mixtures, *Transp Res Rec*. 1901 (2005) 10–17.
- [123] R. Moraes, Investigation of mineral filler effects on the aging process of asphalt mastics, Doctoral Dissertation. (2014).
- [124] S. Huang, M. Zeng, Characterization of aging effect on rheological properties of asphalt-filler systems, *International Journal of Pavement Engineering*. 8 (2007) 213–223. <https://doi.org/10.1080/10298430601135477>.
- [125] H. Chen, H. Bahia, Modelling effects of aging on asphalt binder fatigue using complex modulus and the LAS test, *Int J Fatigue*. 146 (2021). <https://doi.org/10.1016/j.ijfatigue.2021.106150>.
- [126] G. Airey, State of the Art Report on Ageing Test Methods for Bituminous Pavement Materials, *International Journal of Pavement Engineering*. 4 (2003) 165–176. <https://doi.org/10.1080/1029843042000198568>.
- [127] C. Bell, Y. AbWahab, Cristi ME, Laboratory aging of asphalt-aggregate mixtures, in: *Serviceability and Durability of Construction Materials*, ASCE, 1990: pp. 254–262.
- [128] R. Liang, S. Lee, Short-Term and Long-Term Aging Behavior of Rubber Modified Asphalt Paving Mixture, *Transp Res Rec*. 1530 (1996) 11–17. <https://doi.org/10.1177/0361198196153000102>.
- [129] F. Roberts, P. Kandhal, E. Brown, D. Lee, T. Kennedy, Hot mix asphalt materials, mixture design and construction, (1991).

- [130] O. Sirin, D. Paul, E. Kassem, State of the art study on aging of asphalt mixtures and use of antioxidant additives, *Advances in Civil Engineering*. (2018).
- [131] R. Griffin, T. Miles, C. Penther, Microfilm durability test for asphalt, in: *Association of Asphalt Paving Technologist*, 1955: pp. 31–62.
- [132] R. Schmidt, L. Santucci, The effect of asphalt properties on the fatigue cracking of asphalt concrete on the Zaca-Wigmore test Project, in: *Association of Asphalt Paving Technologists*, 1969: pp. 39–64.
- [133] G. Kemp, N. Predoehl, A comparison of field and laboratory environments on asphalt durability, in: *Association of Asphalt Paving Technologists*, 1981: pp. 492–537.
- [134] J. Petersen, A thin-film accelerated aging test for evaluating asphalt oxidative aging, in: *Association of Asphalt Paving Technologists*, 1989: pp. 220–237.
- [135] D. Lee, Asphalt durability correlation in Iowa, *Transp Res Rec*. 468 (1973) 43–60.
- [136] A. Edler, M. Hattingh, V. Servas, C. Marais, Use of ageing tests to determine the efficacy of hydrated lime additions to asphalt in retarding its oxidative hardening, in: *Association of Asphalt Paving Technologists*, 1985: pp. 118–139.
- [137] A. Verhasselt, F. Choquet, A new approach to studying the kinetics of bitumen ageing, in: *Chemistry of Bitumens: International Symposium*, 1991: pp. 686–705.
- [138] B. Hayton, R. Elliott, G. Airey, C. Raynor, Long term ageing of bituminous binders, in: *Eurobitume Workshop 99*, Paper No. 126, Luxembourg, 1999.
- [139] G. Airey, B. Rahimzadeh, Combined bituminous binder and mixture linear rheological properties, *Constr Build Mater*. 18 (2004) 535–548.
<https://doi.org/10.1016/j.conbuildmat.2004.04.008>.

- [140] U. Isacson, X. Lu, Characterization of bitumens modified with SEBS, EVA and EBA polymers, *J Mater Sci.* 34 (1999) 3737–3745. <https://doi.org/10.1023/A:1004636329521>.
- [141] Z. You, W.G. Buttlar, Discrete element modeling to predict the modulus of asphalt concrete mixtures, *Journal of Materials in Civil Engineering.* 16 (2004) 140–146. [https://doi.org/10.1061/\(ASCE\)0899-1561\(2004\)16:2\(140\)](https://doi.org/10.1061/(ASCE)0899-1561(2004)16:2(140)).
- [142] C.M. Johnson, H. Wen, H.U. Bahia, Practical application of viscoelastic continuum damage theory to asphalt binder fatigue characterization, *Asphalt Paving Technology: Association of Asphalt Paving Technologists-Proceedings of the Technical Sessions.* 78 (2009) 597–631.
- [143] M. Castro, J.A. Sánchez, Fatigue and Healing of Asphalt Mixtures : Discriminate Analysis of Fatigue Curves, 132 (2006) 168–174. [https://doi.org/10.1061/\(ASCE\)0733-947X\(2006\)132](https://doi.org/10.1061/(ASCE)0733-947X(2006)132).
- [144] B. Huang, X. Shu, G. Zuo, Using notched semi circular bending fatigue test to characterize fracture resistance of asphalt mixtures, *Eng Fract Mech.* (2013). <https://doi.org/10.1016/j.engfracmech.2013.07.003>.
- [145] X. Shu, B. Huang, D. Vukosavljevic, Laboratory evaluation of fatigue characteristics of recycled asphalt mixture, *Constr Build Mater.* 22 (2008) 1323–1330.
- [146] L. Cong, J. Peng, Z. Guo, Q. Wang, Evaluation of fatigue cracking in asphalt mixtures based on surface energy, *Journal of Materials in Civil Engineering.* 29 (2017) 1–6. [https://doi.org/10.1061/\(ASCE\)MT.1943-5533.0001465](https://doi.org/10.1061/(ASCE)MT.1943-5533.0001465).

- [147] F. Moreno-Navarro, M. Rubio-Gamez, A review of fatigue damage in bituminous mixtures : Understanding the phenomenon from a new perspective, *Constr Build Mater.* 113 (2016) 927–938. <https://doi.org/10.1016/j.conbuildmat.2016.03.126>.
- [148] R. Liang, J. Zhou, Prediction of fatigue life of asphalt concrete beams, *Int J Fatigue.* 19 (1997) 117–124.
- [149] K.S. Bonnetti, K. Nam, H.U. Bahia, Measuring and defining fatigue behavior of asphalt binders, *Transp Res Rec.* (2002) 33–43. <https://doi.org/10.3141/1810-05>.
- [150] G. Al-Khateeb, A. Shenoy, A Distinctive Fatigue Failure Criterion, *Journal of the Association of Asphalt Paving Technologists.* 73 (2004) 585–622.
- [151] R. Rice, B. Leis, D. Nelson, *Fatigue Design Handbook*, Society of Automotive Engineers. 10 (1988).
- [152] S. Wu, I. van de Ven, *Asphalt mixture fatigue testing: Influence of test type and specimen size*, (2013).
- [153] OJ Porter, *Foundations for flexible pavements*, in: *Highway Research Board Proceedings* (Vol. 22), 1943.
- [154] L. Nijboer, C. Van der Poel, *A Study of Vibration Phenomena in Asphaltic Road Construction*, in: *Assoc Asphalt Paving Technol Proc*, 1953.
- [155] F. Hveem, *Pavement deflections and fatigue failures*, 114 (1955).
- [156] T.M. Ahmed, H. Al-Khalid, T.Y. Ahmed, Review of Techniques, Approaches and Criteria of Hot-Mix Asphalt Fatigue, *Journal of Materials in Civil Engineering.* 31 (2019) 03119004. [https://doi.org/10.1061/\(asce\)mt.1943-5533.0002933](https://doi.org/10.1061/(asce)mt.1943-5533.0002933).

- [157] C. Hintz, H. Bahia, Understanding mechanisms leading to asphalt binder fatigue in the dynamic shear rheometer, *Road Materials and Pavement Design*. 14 (2013) 231–251. <https://doi.org/10.1080/14680629.2013.818818>.
- [158] A. Molenaar, Structural performance and design of flexible road constructions and asphalt concrete overlays, Doctoral Dissertation. (1983).
- [159] J. Uhlmeyer, K. Willoughby, L. Pierce, J. Mahoney, Top-down cracking in Washington state asphalt concrete wearing courses, *Transp Res Rec*. 1730 (2000) 110–116. <https://doi.org/10.3141/1730-13>.
- [160] A. Molenaar, Bottom-up fatigue cracking: myth or reality, in: *The 5th RILEM Conference: Cracking in Pavement Mitigation, Risk Assessment and Prevention*, Limoges, France, 2004: p. 275.
- [161] K. Ghuzlan, S. Carpenter, Energy-derived, damage-based failure criterion for fatigue testing, *Transp Res Rec*. (2000) 141–149. <https://doi.org/10.3141/1723-18>.
- [162] P. Pell, K. Cooper, The effect of testing and mix variables on the fatigue performance of bituminous materials, *Journal of the Association of Asphalt Paving Technologists*. 44 (1975) 1–37.
- [163] H. Lee, J. Daniel, Y. Kim, Continuum damage mechanics-based fatigue model of asphalt concrete, *Journal of Materials in Civil Engineering*. 12 (2000) 105–112. [https://doi.org/10.1061/\(ASCE\)0899-1561\(2000\)12:2\(105\)](https://doi.org/10.1061/(ASCE)0899-1561(2000)12:2(105)).
- [164] K. Ghuzlan, S. Carpenter, Traditional Fatigue Analysis of Asphalt Concrete Mixtures, in: *TRB 2003 Annual Meeting*. Recuperado El, Vol. 3, 2003.
- [165] C. Monismith, J. Epps, F. Finn, Improved asphalt mix design (with discussion), *Journal of the Association of Asphalt Paving Technologists*. 66 (1997) 604–632.

- [166] T. Hou, Fatigue performance prediction of North Carolina mixtures using simplified viscoelastic continuum damage model, 2009.
- [167] D. Wang, A Micro-scale Method to Associate the Fatigue Properties of Asphalt Binder , Mastic and Mixture, Doctoral Dissertation. (2011).
- [168] R.A. Schapery, Correspondence principles and a generalized J integral for large deformation and fracture analysis of viscoelastic media, *Int J Fract.* 25 (1984) 195–223. <https://doi.org/10.1007/BF01140837>.
- [169] K. Majidzadeh, E. Kauffmann, C. Saraf, Analysis of fatigue of paving mixtures from the fracture mechanics viewpoint, ASTM International, 1972.
- [170] D. Ramsamooj, Analytical Model for Prediction of Fatigue Life of Asphalt Concrete, Including Size Effect, *International Journal of Pavement Engineering.* 3 (2002) 161–171. <https://doi.org/10.1080/1029843021000067818>.
- [171] M.A. Mull, K. Stuart, A. Yehia, Fracture resistance characterization of chemically modified crumb rubber asphalt pavement, *J Mater Sci.* 37 (2002) 557–566. <https://doi.org/10.1023/A:1013721708572>.
- [172] J. Button, D. Little, Y. Kim, J. Ahmed, Mechanistic Evaluation of Selected Asphalt Additives (with discussion), *Association of Asphalt Paving Technologists Proc.* 56 (1987).
- [173] M. Ameri, S. Nowbakht, M. Molayem, M.R.M. Aliha, Investigation of fatigue and fracture properties of asphalt mixtures modified with carbon nanotubes, *Fatigue Fract Eng Mater Struct.* 39 (2016) 896–906. <https://doi.org/10.1111/FFE.12408>.

- [174] J. Daniel, Y. Kim, Laboratory Evaluation of Fatigue Damage and Healing of Asphalt Mixtures, *Journal of Materials in Civil Engineering*. 13 (2001) 434–440. [https://doi.org/10.1061/\(ASCE\)0899-1561\(2001\)13:6\(434\)](https://doi.org/10.1061/(ASCE)0899-1561(2001)13:6(434)).
- [175] W. Ma, Proposed Improvements to Overlay Test for Determining Cracking Resistance of Asphalt Mixtures (Doctoral dissertation), 2014.
- [176] S. Lv, C. Xia, C. Liu, J. Zheng, F Zhang, Fatigue equation for asphalt mixture under low temperature and low loading frequency conditions, *Constr Build Mater*. 211 (2019) 1085–1093.
- [177] B.D. Prowell, Estimate of fatigue shift factors between laboratory tests and field performance, *Transp Res Rec*. 2181 (2010) 117–124. <https://doi.org/10.3141/2181-13>.
- [178] N. Yoshida, Fatigue failure criterion for hydraulic graded iron and steel slag base-course and ITS implementation into the Japanese asphalt pavement design method, *Journal of JSCE*. 2 (2014) 62–68.
- [179] H. Cheng, J. Liu, L. Sun, L. Liu, Y. Zhang, Fatigue behaviours of asphalt mixture at different temperatures in four-point bending and indirect tensile fatigue tests, *Constr Build Mater*. 273 (2021) 121675.
- [180] G. Nsengiyumva, Development of semi-circular bending (SCB) fracture test for bituminous mixtures, (2015).
- [181] C. Clopotel, R. Velasquez, H. Bahia, F. Pérez-Jiménez, R. Miró, R. Botella, Relationship between binder and mixture damage resistance at intermediate and low temperatures, *Transp Res Rec*. 2293 (2012) 39–47. <https://doi.org/10.3141/2293-05>.
- [182] M.P. Wagoner, W.G. Buttlar, G.H. Paulino, P. Blankenship, Investigation of the Fracture Resistance of Hot-Mix Asphalt Concrete Using a Disk-Shaped Compact

- Tension Test, Transp Res Rec. 1929 (2005) 183–192.
<https://doi.org/10.1177/0361198105192900122>.
- [183] C. Stewart, C. Oputa, E. Garcia, Effect of specimen thickness on the fracture resistance of hot mix asphalt in the disk-shaped compact tension (DCT) configuration, *Constr Build Mater.* 160 (2018) 487–496. <https://doi.org/10.1016/j.conbuildmat.2017.11.041>.
- [184] X.J. Li, M.O. Marasteanu, Using Semi Circular Bending Test to Evaluate Low Temperature Fracture Resistance for Asphalt Concrete, *Exp Mech.* 50 (2010) 867–876. <https://doi.org/10.1007/S11340-009-9303-0>.
- [185] Y. Kim, F. Arago, Microstructure modeling of rate-dependent fracture behavior in bituminous paving mixtures, *Finite Elements in Analysis and Design.* 63 (2013) 23–32.
- [186] Z. Wu, L. Mohammad, L. Wang, M. Mull, Fracture resistance characterization of superpave mixtures using the semi-circular bending test, *J ASTM Int.* 2 (2005) 1–15. <https://doi.org/10.1520/JAI12264>.
- [187] I. Artamendi, H. Khalid, A comparison between beam and semi-circular bending fracture tests for asphalt, *Road Materials and Pavement Design.* 7 (2006) 163–180. <https://doi.org/10.1080/14680629.2006.9690063>.
- [188] S. Hu, F. Zhou, T. Scullion, Reflection cracking-based asphalt overlay thickness design and analysis tool, *Transp Res Rec.* 2155 (2010) 12–23. <https://doi.org/10.3141/2155-02>.
- [189] F. Germann, R. Lytton, Methodology for Predicting the Reflection Cracking Life of Asphalt Concrete Overlays, Res. Rpt. No. 207-5. Texas Trans. Inst., Texas Univ, 1979.
- [190] F. Zhou, T. Scullion, Upgraded overlay tester and its application to characterize reflection cracking resistance of asphalt mixtures (No. FHWA/TX-04/0-4467-1), Texas Transportation Institute, Texas A & M University System. (2003).

- [191] F. Zhou, S. Hu, D.H. Chen, T. Scullion, Overlay tester: Simple performance test for fatigue cracking, *Transp Res Rec.* 2001 (2007) 1–8. <https://doi.org/10.3141/2001-01>.
- [192] F. Gu, Y. Zhang, X. Luo, R. Luo, R.L. Lytton, Improved methodology to evaluate fracture properties of warm-mix asphalt using overlay test, *Transp Res Rec.* 2506 (2015) 8–18. <https://doi.org/10.3141/2506-02>.
- [193] F. Pérez-Jiménez, G. Valdés, R. Miró, A. Martínez, R. Botella, Fénix test: Development of a new test procedure for evaluating cracking resistance in bituminous mixtures, *Transp Res Rec.* (2010) 36–43. <https://doi.org/10.3141/2181-05>.
- [194] F. Pérez-Jiménez, R. Botella, A. Martínez, R. Miro, Analysis of the mechanical behaviour of bituminous mixtures at low temperatures, *Constr Build Mater.* 46 (2013) 193–202.
- [195] Y. Wang, L. Sun, J. Zhou, Pavement performance evaluation of recycled styrene–butadiene–styrene-modified asphalt mixture, *International Journal of Pavement Engineering.* 18 (2017) 404–413. <https://doi.org/10.1080/10298436.2015.1095296>.
- [196] V. Castelo Branco, E. Masad, A. Bhasin, D. Little, Fatigue Analysis of Asphalt Mixtures Independent of Mode of Loading, *Transp Res Rec.* 2057 (2008) 149–156. <https://doi.org/10.3141/2057-18>.
- [197] D. Anderson, Y. Le Hir, M. Marasteanu, J. Planche, D. Martin, G. Gauthier, Evaluation of fatigue criteria for asphalt binders, *Transp Res Rec.* 1766 (2001) 48–55. <https://doi.org/10.3141/1766-07>.
- [198] R. Hajj, A. Bhasin, The search for a measure of fatigue cracking in asphalt binders – a review of different approaches, *International Journal of Pavement Engineering.* 19 (2018) 205–219. <https://doi.org/10.1080/10298436.2017.1279490>.

- [199] B. Tsai, Monismith, Influence of asphalt binder properties on the fatigue performance of asphalt concrete pavements (with discussion), *Journal of the Association of Asphalt Paving Technologists*. 74 (2005).
- [200] H. Bahia, H. Zhai, M. Zeng, Y. Hu, P. Turner, Development of binder specification parameters based on characterization of damage behavior (with discussion), *Journal of the Association of Asphalt Paving Technologists*. 70 (2001).
- [201] F. Zhou, W. Mogawer, H. Li, A. Andriescu, A. Copeland, Evaluation of fatigue tests for characterizing asphalt binders, *Journal of Materials in Civil Engineering*. 25 (2013) 610–617. [https://doi.org/10.1061/\(ASCE\)MT.1943-5533.0000625](https://doi.org/10.1061/(ASCE)MT.1943-5533.0000625).
- [202] H. Bahia, D. Hanson, M. Zeng, H. Zhai, M. Khatri, Characterization of modified asphalt binders in superpave mix design. No. Project 9-10 FY'96, 2001.
- [203] L. Rezende, S. Kommidi, Y. Kim, M. Khedmati, Strain sweep fatigue testing of sand asphalt mortar to investigate the effects of sample geometry, binder film thickness, and testing temperature, in: *Transp Res Rec*, 2021: pp. 516–529. <https://doi.org/10.1177/03611981211011646>.
- [204] S. Kommidi, Y. Kim, L. de Rezende, Fatigue characterization of binder with aging in two length scales: sand asphalt mortar and parallel plate binder film, *Constr Build Mater*. 237 (2020). <https://doi.org/10.1016/j.conbuildmat.2019.117588>.
- [205] C. Johnson, Estimating asphalt binder fatigue resistance using an accelerated test method, *Doctoral Dissertation*. (2010).
- [206] N. Saboo, M. Sukhija, Effect of Analysis Procedures in Linear Amplitude Sweep Test on the Fatigue Resistance of Nanoclay Modified Asphalt Binders, *Journal of Materials*

- in Civil Engineering. 33 (2020) 04020417. [https://doi.org/10.1061/\(ASCE\)MT.1943-5533.0003507](https://doi.org/10.1061/(ASCE)MT.1943-5533.0003507).
- [207] A. Tayebali, G. Rowe, J. Sousa, Fatigue response of asphalt-aggregate mixtures (with discussion), *Journal of the Association of Asphalt Paving Technologists*. (1992) 61.
- [208] Y. Kim, H. Lee, D. Little, Fatigue characterization of asphalt concrete using viscoelasticity and continuum damage theory (with discussion), *Journal of the Association of Asphalt Paving Technologists*. (1997) 66.
- [209] S. Luo, Z. Qian, X. Yang, Q Lu, Fatigue behavior of epoxy asphalt concrete and its moisture susceptibility from flexural stiffness and phase angle, *Constr Build Mater*. 145 (2017) 506–517.
- [210] S. Shen, S.H. Carpenter, Application of the Dissipated Energy Concept in Fatigue Endurance Limit Testing, *Transp Res Rec*. 1929 (2005) 165–173. <https://doi.org/10.1177/0361198105192900120>.
- [211] S.H. Carpenter, S. Shen, Dissipated Energy Approach to Study Hot-Mix Asphalt Healing in Fatigue, *Transp Res Rec*. 1970 (2006) 178–185. <https://doi.org/10.1177/0361198106197000119>.
- [212] P. Ashish, D. Singh, S. Bohm, Evaluation of rutting, fatigue and moisture damage performance of nanoclay modified asphalt binder, *Constr Build Mater*. 113 (2016) 341–350. <https://doi.org/10.1016/j.conbuildmat.2016.03.057>.
- [213] M. Sabouri, D. Mirzaiyan, A Moniri, Effectiveness of Linear Amplitude Sweep (LAS) asphalt binder test in predicting asphalt mixtures fatigue performance, *Constr Build Mater*. 171 (2018) 281–290.

- [214] R.A. Schapery, Nonlinear Viscoelastic and Viscoplastic Constitutive Equations Based on Thermodynamics, *Mech Time Depend Mater.* 1 (1997) 209–240. <https://doi.org/10.1023/A:1009767812821>.
- [215] H. Wang, X. Liu, M. van de Ven, G. Lu, S. Erkens, A. Skarpas, Fatigue performance of long-term aged crumb rubber modified bitumen containing warm-mix additives, *Constr Build Mater.* 239 (2020) 117824. <https://doi.org/10.1016/j.conbuildmat.2019.117824>.
- [216] F. Safaei, J. Lee, L. Nascimento, C. Hintz, Y. Kim, Implications of warm-mix asphalt on long-term oxidative ageing and fatigue performance of asphalt binders and mixtures, *Road Materials and Pavement Design.* 15 (2014) 45–61. <https://doi.org/10.1080/14680629.2014.927050>.
- [217] N. Saboo, New Damage Parameter for Fatigue Analysis of Asphalt Binders in Linear Amplitude Sweep Test, *Journal of Materials in Civil Engineering.* 32 (2020) 1–7. [https://doi.org/10.1061/\(ASCE\)MT.1943-5533.0003225](https://doi.org/10.1061/(ASCE)MT.1943-5533.0003225).
- [218] C. Wang, L. Zhao, W. Cao, D. Cao, B. Tian, Development of paving performance index system for selection of modified asphalt binder, *Constr Build Mater.* 153 (2017) 695–703.
- [219] Y. Wang, C. Wang, H. Bahia, Comparison of the fatigue failure behaviour for asphalt binder using both cyclic and monotonic loading modes, *Constr Build Mater.* 151 (2017) 767–774.
- [220] R. Botella, F. Pérez-Jiménez, R Miró, Application of a strain sweep test to assess fatigue behavior of asphalt binders, *Constr Build Mater.* 36 (2012) 906–912.
- [221] T. López-Montero, R Miró, Differences in cracking resistance of asphalt mixtures due to ageing and moisture damage, *Constr Build Mater.* 112 (2016) 299–306.

- [222] F. Pérez-Jiménez, R. Botella, T López-Monter, Complexity of the behaviour of asphalt materials in cyclic testing, *Int J Fatigue*. 98 (2017) 111–120.
- [223] F. Perez Jimenez, N. Botella, A. Martinez, R. Miro, Estimating the fatigue law of asphalt mixtures using a strain sweep test (EBADE test), in: *5th Eata Conference Proceedings*, 2013: pp. 1–15.
- [224] G. Valdes-Vidal, A. Calabi-Floody, E. Sanchez-Alonso, R. Miro, Effect of aggregate type on the fatigue durability of asphalt mixtures, *Constr Build Mater*. 224 (2019) 124–131.
- [225] H. Ding, A. Rahman, Q. Li, Y. Qiu, Advanced mechanical characterization of asphalt mastics containing tourmaline modifier, *Constr Build Mater*. 150 (2017) 520–528. <https://doi.org/10.1016/j.conbuildmat.2017.05.203>.
- [226] M. Paliukaite, M. Assuras, S. Hesp, Effect of recycled engine oil bottoms on the ductile failure properties of straight and polymer-modified asphalt cements, *Constr Build Mater*. 126 (2016) 190–196.
- [227] A. Adrian, S. Hesp, J. Youtcheff, Essential and Plastic Works of Ductile Fracture in Asphalt Binders, *Transp Res Rec*. 1875 (2004) 7. <https://doi.org/10.3141/1875-01>.
- [228] Y. Qiu, H. Ding, A. Rahman, W. Wang, Damage characteristics of waste engine oil bottom rejuvenated asphalt binder in the non-linear range and its microstructure, *Constr Build Mater*. 174 (2018) 202–209.
- [229] S. Ho, L. Zanzotto, Sample preparation for direct tension testing: Improving determination of asphalt binder failure stress and test repeatability, *Transp Res Rec*. (2001) 15–23. <https://doi.org/10.3141/1766-03>.

- [230] A. Falchetto, M. Turos, M. Marasteanu, Investigation on asphalt binder strength at low temperatures, *Road Materials and Pavement Design*. 13 (2012) 804–816. <https://doi.org/10.1080/14680629.2012.735793>.
- [231] S. Kim, Z. Wysong, J. Kovach, Low-Temperature Thermal Cracking of Asphalt Binder by Asphalt Binder Cracking Device, *Transp Res Rec*. 1962 (2006) 28–35. <https://doi.org/10.1177/0361198106196200104>.
- [232] T. Niu, R. Roque, G. Lopp, Development of a binder fracture test to determine fracture energy properties, *Road Materials and Pavement Design*. (2014) 219–238. <https://doi.org/10.1080/14680629.2014.927412>.
- [233] M. Edwards, S. Hesp, Compact Tension Testing of Asphalt Binders at Low Temperatures, *Transportation Research Record: Journal of the Transportation Research Board*. 1962 (2006) 36–43. <https://doi.org/10.1177/0361198106196200105>.
- [234] M. Bueno, M. Hugener, M. Partl, Low temperature characterization of bituminous binders with a new cyclic shear cooling (CSC) failure test, *Constr Build Mater*. 58 (2014) 16–24.
- [235] Z. Sun, B. Behnia, W. Buttlar, H. Reis, Assessment of low-temperature cracking in asphalt materials using an acoustic emission approach, *J Test Eval*. 45 (2017) 1948–1958. <https://doi.org/10.1520/JTE20160579>.
- [236] G.D. Airey, B. Rahimzadeh, A.C. Collop, Linear rheological behavior of bituminous paving materials, *Journal of Materials in Civil Engineering*. 16 (2004) 212–220. [https://doi.org/10.1061/\(ASCE\)0899-1561\(2004\)16:3\(212\)](https://doi.org/10.1061/(ASCE)0899-1561(2004)16:3(212)).

- [237] P. Cong, N. Liu, H. Shang, H. Zhao, Rheological and fatigue properties of epoxy asphalt binder, *International Journal of Pavement Research and Technology*. 8 (2015) 370–376. [https://doi.org/10.6135/ijprt.org.tw/2015.8\(5\).370](https://doi.org/10.6135/ijprt.org.tw/2015.8(5).370).
- [238] M. Rochlani, S. Leischner, G.C. Falla, D. Wang, S. Caro, F. Wellner, Influence of filler properties on the rheological, cryogenic, fatigue and rutting performance of mastics, *Constr Build Mater.* 227 (2019) 116974. <https://doi.org/10.1016/j.conbuildmat.2019.116974>.
- [239] M. Guo, Y. Tan, Interaction between asphalt and mineral fillers and its correlation to mastics' viscoelasticity, *International Journal of Pavement Engineering*. 22 (2021) 1–10. <https://doi.org/10.1080/10298436.2019.1575379>.
- [240] M. Shivokhin, M. García-Morales, P. Partal, A.A. Cuadri, C. Gallegos, Rheological behaviour of polymer-modified bituminous mastics: A comparative analysis between physical and chemical modification, *Constr Build Mater.* 27 (2012) 234–240. <https://doi.org/10.1016/j.conbuildmat.2011.07.055>.
- [241] Y. Kim, D. Little, Linear Viscoelastic Analysis of Asphalt Mastics, *Journal of Materials in Civil Engineering*. 16 (2004) 122–132. [https://doi.org/10.1061/\(ASCE\)0899-1561\(2004\)16](https://doi.org/10.1061/(ASCE)0899-1561(2004)16).
- [242] A. Motamed, H.U. Bahia, Influence of Test Geometry, Temperature, Stress Level, and Loading Duration on Binder Properties Measured Using DSR, *Journal of Materials in Civil Engineering*. 23 (2011) 1422–1432. [https://doi.org/10.1061/\(asce\)mt.1943-5533.0000321](https://doi.org/10.1061/(asce)mt.1943-5533.0000321).
- [243] T. Mezger, *The rheology handbook: for users of rotational and oscillatory rheometers*, European Coatings. (2020). <https://doi.org/10.1515/9783748603702/PDF>.

- [244] F. Navarro, P. Partal, F. Martinez-Boza, C. Gallegos, Influence of crumb rubber concentration on the rheological behavior of a crumb rubber modified bitumen, *Energy & Fuels*. 19 (2005) 1984–1990. <https://doi.org/10.1021/ef049699a>.
- [245] M. Farrar, R. Grimes, C. Sui, J. Planche, T. Turner, R. Glaser, Thin film oxidative aging and low temperature performance grading using small plate dynamic shear rheometry: an alternative to standard rtfo, pav, and bbr, in: *Eurasphalt and Eurobitume Congress*, Istanbul, Turkey, 2012.
- [246] D. Mensching, C. Jacques, J. Daniel, Applying the glover-rowe parameter to evaluate low-temperature performance of hot mix asphalt LTPP sections, *Journal of Materials in Civil Engineering*. 28 (2016) 04016096. [https://doi.org/10.1061/\(ASCE\)MT.1943-5533.0001606](https://doi.org/10.1061/(ASCE)MT.1943-5533.0001606).
- [247] H. Zhang, G. Xu, X. Chen, R. Wang, K. Shen, Effect of long-term laboratory aging on rheological properties and cracking resistance of polymer-modified asphalt binders at intermediate and low temperature range, *Constr Build Mater*. 226 (2019) 767–777. <https://doi.org/10.1016/j.conbuildmat.2019.07.206>.
- [248] Granite Mines in India, (2014). <https://www.mapsofindia.com/maps/minerals/granite-mines-map.html> (accessed November 28, 2022).
- [249] Aluminium Industry in India, (2021). <https://business.mapsofindia.com/aluminium/> (accessed November 28, 2022).
- [250] An overview of Indian Marble, (2016). <https://www.regattaexports.com/an-overview-of-indian-marble/> (accessed November 28, 2022).
- [251] India Mineral Map, (2019). <https://www.mapsofindia.com/maps/minerals/> (accessed November 28, 2022).

- [252] N. Chatterjee, The basalt stone quarries of eastern India, *International Journal of Environmental Studies*. 67 (2010) 439–457. <https://doi.org/10.1080/00207233.2010.491253>.
- [253] Quartz Mines In India: An Overview Of Quartz Resources And Reserves | Unique Crystal Minerals, (2019). <https://uniquecrystalminerals.com/quartz-mines-india/> (accessed November 28, 2022).
- [254] Stones of India - Wikipedia, (2013). https://en.wikipedia.org/wiki/Stones_of_India (accessed November 28, 2022).
- [255] M. Lima, L. Thives, Evaluation of red mud as filler in Brazilian dense graded asphalt mixtures, *Constr Build Mater*. 260 (2020) 119894. <https://doi.org/10.1016/j.conbuildmat.2020.119894>.
- [256] R. Choudhary, A. Kumar, G. Rahman, Rheological and mechanical properties of bauxite residue as hot mix asphalt filler, *International Journal of Pavement Research and Technology*. 12 (2019) 623–631. <https://doi.org/10.1007/s42947-019-0074-4>.
- [257] S. Xue, F. Zhu, X. Kong, C. Wu, L. Huang, N. Huang, W. Hartley, A review of the characterization and revegetation of bauxite residues (Red mud), *Environmental Science and Pollution Research*. 23 (2016) 1120–1132. <https://doi.org/10.1007/S11356-015-4558-8>.
- [258] W. Liu, J. Yang, B. Xiao, Review on treatment and utilization of bauxite residues in China, *Int J Miner Process*. 93 (2009) 220–231. <https://doi.org/10.1016/j.minpro.2009.08.005>.

- [259] J. Choudhary, B. Kumar, A. Gupta, Performance evaluation of bauxite residue modified asphalt concrete mixes, *European Journal of Environmental and Civil Engineering*. 26 (2022) 978–994. <https://doi.org/10.1080/19648189.2019.1691662>.
- [260] V.K. Gupta, M. Gupta, S. Sharma, Process development for the removal of lead and chromium from aqueous solutions using red mud - An aluminium industry waste, *Water Res.* 35 (2001) 1125–1134. [https://doi.org/10.1016/S0043-1354\(00\)00389-4](https://doi.org/10.1016/S0043-1354(00)00389-4).
- [261] E. Lopez, B. Soto, M. Arias, A. Nunez, D. Rubinos, Adsorbent properties of red mud and its use for wastewater treatment, *Water Res.* 32 (1998) 1314–1322. <https://www.sciencedirect.com/science/article/pii/S0043135497003266> (accessed June 19, 2020).
- [262] G. Akay, B. Keskinler, A. Cakici, U. Danis, Phosphate removal from water by red mud using crossflow microfiltration, *Water Res.* 32 (1998) 717–726. <https://www.sciencedirect.com/science/article/pii/S0043135497002364> (accessed June 19, 2020).
- [263] L. Pérez-Villarejo, F. Corpas-Iglesias, S. Martínez-Martínez, R. Artiaga, J. Pascual-Cosp, Manufacturing new ceramic materials from clay and red mud derived from the aluminium industry, *Construction and Building Materials*. 35 (2012) 656–665.
- [264] M. Singh, S. Upadhayay, P. Prasad, Preparation of special cements from red mud, *Waste Management*. 16 (1996) 665–670.
- [265] F. Kehagia, A successful pilot project demonstrating the re-use potential of bauxite residue in embankment construction, *Resour Conserv Recycl.* 54 (2010) 417–421.

- [266] S. Liu, X. Guan, S. Zhang, Z. Dou, C. Feng, H. Zhang, S. Luo, Sintered bayer red mud based ceramic bricks: Microstructure evolution and alkalis immobilization mechanism, *Ceram Int.* 43 (2017) 13004–13008.
- [267] E. Kalkan, Utilization of red mud as a stabilization material for the preparation of clay liners, *Eng Geol.* 87 (2006) 220–229. <https://doi.org/10.1016/j.enggeo.2006.07.002>.
- [268] Quartz | Definition, Types, Uses, & Facts | Britannica, (2018). <https://www.britannica.com/science/quartz> (accessed July 30, 2022).
- [269] M. Taciroğlu, F. Ergezer, T. Baykal, E. Eriskin, S. Terzi, Investigation of waste quartz sand as filler in hot-mix asphalt, *Constr Build Mater.* 342 (2022) 128004.
- [270] S. Firat, G. Yılmaz, A. Cömert, M Sümer, Utilization of marble dust, fly ash and waste sand (Silt-Quartz) in road subbase filling materials, *KSCE Journal of Civil Engineering.* 16 (2012) 1143–1151. <https://doi.org/10.1007/s12205-012-1526-4>.
- [271] P. Dyer, M. Lima, L. Klinsky, S. Silva, G. Coppio, Environmental characterization of Foundry Waste Sand (WFS) in hot mix asphalt (HMA) mixtures, *Constr Build Mater.* 171 (2018) 474–484.
- [272] Y. Li, S. Ma, G. Chen, S. Wang, Mechanical properties and durability of cement-stabilised macadam incorporating waste foundry sand, *International Journal of Pavement Engineering.* (2021) 1–15. <https://doi.org/10.1080/10298436.2021.2011278>.
- [273] A. Aliabdo, M. Abd Elmoaty, E. Auda, Re-use of waste marble dust in the production of cement and concrete, *Constr Build Mater.* 50 (2014) 28–41. <https://doi.org/10.1016/j.conbuildmat.2013.09.005>.
- [274] A. Rana, P. Kalla, L. Csetenyi, Sustainable use of marble slurry in concrete, *J Clean Prod.* 94 (2015) 304–311. <https://doi.org/10.1016/j.jclepro.2015.01.053>.

- [275] H. Aruntas, M. Guru, M. Dayi, I. Tekin, Utilization of waste marble dust as an additive in cement production, *Mater Des.* 31 (2010) 4039–4042. <https://doi.org/10.1016/j.matdes.2010.03.036>.
- [276] J. Choudhary, B. Kumar, A Gupta, Feasible utilization of waste limestone sludge as filler in bituminous concrete, *Constr Build Mater.* 239 (2020) 117781.
- [277] Government of Rajasthan, Workshop on Gainful Utilization of Kota Stone Slurry and Waste, 2015.
- [278] T. Kibriya, L. Tahir, Sustainable Construction—High Performance Concrete Containing Limestone Dust as Filler, *World Journal of Engineering and Technology.* 5 (2017) 404.
- [279] P. Kostrzewa-Demczuk, A. Stepien, R. Dachowski, A. Krugielka, The use of basalt powder in autoclaved brick as a method of production waste management, *J Clean Prod.* 320 (2021) 128900.
- [280] C. Ledda, V. Rapisarda, M. Bracci, L. Proietti, M. Zuccarello, R. Fallico, M. Fiore, M. Ferrante, Professional exposure to basaltic rock dust: Assessment by the *Vibrio fischeri* ecotoxicological test, *Journal of Occupational Medicine and Toxicology.* 8 (2013) 1–5. <https://doi.org/10.1186/1745-6673-8-23>.
- [281] V. Fiore, G. Di Bella, A. Valenza, Glass–basalt/epoxy hybrid composites for marine applications, *Mater Des.* 32 (2011) 2091–2099.
- [282] F.P. Jiménez, R.M. Recasens, A. Martínez, Effect of filler nature and content on the behaviour of bituminous mastics, *Road Materials and Pavement Design.* 9 (2008) 417–431. <https://doi.org/10.1080/14680629.2008.9690177>.

- [283] H. Bahia, A. Faheem, C. Hintz, I. Al-Qadi, G. Reinke, Test methods and specification criteria for mineral filler used in HMA (Final Report 9–45). Prepared for National Cooperative Highway Research Program, (2011).
- [284] P. Rigden, The use of fillers in bituminous road surfacings. A study of filler-binder systems in relation to filler characteristics, *Journal of the Society of Chemical Industry*. 66 (1947) 299–309. <https://doi.org/10.1002/JCTB.5000660902>.
- [285] A. Faheem, H. Wen, L. Stephenson, H. Bahia, Effect of mineral filler on damage resistance characteristics of asphalt binders, in: *Asphalt Paving Technology- Proceedings*, 77, 2008: p. 885.
- [286] W. Heukelom, The role of filler in bituminous mixes, in: *Assoc Asphalt Paving Technol Proc.*, 1968. <https://trid.trb.org/view/100862> (accessed May 12, 2022).
- [287] H. Wang, I. Al-Qadi, A. Faheem, H. Bahia, S. Yang, G. Reinke, Effect of mineral filler characteristics on asphalt mastic and mixture rutting potential, *Transp Res Rec*. 2208 (2011) 33–39. <https://doi.org/10.3141/2208-05>.
- [288] R. Lackner, M. Spiegl, R. Blab, J. Eberhardsteiner, Is Low-Temperature Creep of Asphalt Mastic Independent of Filler Shape and Mineralogy?— Arguments from Multiscale Analysis, 17 (2006) 485–491. [https://doi.org/10.1061/\(ASCE\)0899-1561\(2005\)17](https://doi.org/10.1061/(ASCE)0899-1561(2005)17).
- [289] D. Little, J. Petersen, Unique effects of hydrated lime filler on the performance-related properties of asphalt cements: Physical and chemical interactions revisited, *Journal of Materials in Civil Engineering*. 17 (2005) 207–218. [https://doi.org/10.1061/\(ASCE\)0899-1561\(2005\)17:2\(207\)](https://doi.org/10.1061/(ASCE)0899-1561(2005)17:2(207)).

- [290] International Slurry Seal Association. Test Method for Determination of Methylene Blue Absorption Value (MBV) of Mineral Aggregate Fillers and Fines. ISSA Bulletin 145, 1989, (n.d.).
- [291] A. Nikolaidis, E. Manthos, M. Sarafidou, Sand equivalent and methylene blue value of aggregates for highway engineering, *Foundations of Civil and Environmental Engineering*. 10 (2007) 111–121.
- [292] J. Choudhary, B. Kumar, A. Gupta, Utilization of solid waste materials as alternative fillers in asphalt mixes: A review, *Constr Build Mater*. 234 (2020) 117271. <https://doi.org/10.1016/j.conbuildmat.2019.117271>.
- [293] J. Petersen, H. Plancher, Model studies and interpretive review of the competitive adsorption and water displacement of petroleum asphalt chemical functionalities on mineral aggregate, *Pet Sci Technol*. 16 (1998) 89–131. <https://doi.org/10.1080/10916469808949774>.
- [294] U. Bagampadde, U. Isacson, B. Kiggundu, Influence of aggregate chemical and mineralogical composition on stripping in bituminous mixtures, *The International Journal of Pavement Engineering*. 6 (2007) 229–239. <https://doi.org/10.1080/10298430500440796>.
- [295] Y. Cheng, J. Tao, Y. Jiao, G. Tan, Q. Guo, S. Wang, P. Ni, Influence of the properties of filler on high and medium temperature performances of asphalt mastic, *Constr Build Mater*. 118 (2016) 268–275. <https://doi.org/10.1016/j.conbuildmat.2016.05.041>.
- [296] K. Vernon-Parry, Scanning electron microscopy: an introduction, *III-Vs Review*. 13 (2000) 40–44. <https://www.sciencedirect.com/science/article/pii/S096112900080006X> (accessed May 16, 2022).

- [297] J. Zielinski, L. Kettle, *Physical characterization: surface area and porosity*, London: Intertek. (2013).
- [298] J. Rouquerol, D. Avnir, C. Fairbridge, D. Everett, J. Haynes, N. Pernicore, J. Ramsay, K. Singh, K. Unger, *Recommendations for the characterization of porous solids (Technical Report)*, *Pure and Applied Chemistry*. 66 (1994) 1739–1758.
- [299] A. Faheem, H. Bahia, *Modelling of asphalt mastic in terms of filler-bitumen interaction*, *Road Materials and Pavement Design*. 11 (2010) 281–303. <https://doi.org/10.3166/RMPD.11HS.281-303>.
- [300] A. Marath, D. Singh, B. Rajan, *Stiffness Behavior and Micromechanical Modeling of Asphalt Mastic Composed of Different Fillers*, *Journal of Materials in Civil Engineering*. 34 (2022). [https://doi.org/10.1061/\(ASCE\)MT.1943-5533.0004328](https://doi.org/10.1061/(ASCE)MT.1943-5533.0004328).
- [301] H. Zhang, H. Li, A. Abdelhady, N. Xie, W. Li, J. Liu, X. Liang, B. Yang, *Fine solid wastes as a resource conserving filler and their influence on the performance of asphalt materials*, *J Clean Prod*. 252 (2020) 119929. <https://doi.org/10.1016/j.jclepro.2019.119929>.
- [302] X. Cheng, S. Han, Y. Liu, O. Xu, *Laboratory investigation on low-temperature performance of asphalt at different aging stages*, *Constr Build Mater*. 229 (2019) 116850. <https://doi.org/10.1016/j.conbuildmat.2019.116850>.
- [303] N. Saboo, M. Sukhija, G. Singh, *Effect of Nanoclay on Physical and Rheological Properties of Waste Cooking Oil Modified Asphalt Binder*, *Journal of Materials in Civil Engineering*. (2020). [https://doi.org/10.1061/\(ASCE\)MT.1943-5533.0003598](https://doi.org/10.1061/(ASCE)MT.1943-5533.0003598).

- [304] F. Bhat, M. Mir, Investigating the effects of nano Al₂O₃ on high and intermediate temperature performance properties of asphalt binder, *Road Materials and Pavement Design*. 22 (2021) 2604–2625. <https://doi.org/10.1080/14680629.2020.1778509>.
- [305] A. Singh, A. Gupta, M. Miljković, Intermediate- and high-temperature damage of bitumen modified by HDPE from various sources, *Road Materials and Pavement Design*. 24 (2023) 640–653. <https://doi.org/10.1080/14680629.2023.2181017>.
- [306] H. Pink, R. Merz, D. Bosniack, Asphalt rheology: Experimental determination of dynamic moduli at low temperature, In *Association of Asphalt Paving Technologists Proceedings*. 49 (1980).
- [307] J. Goodrich, Asphalt and polymer modified asphalt properties related to the performance of asphalt concrete mixes (with discussion), *Association of Asphalt Paving Technologists Proc.* 57 (1988).
- [308] D. Goos, D. Carre, Rheological Modelling of Bituminous Binders - A Global Approach to Road Technologies, in: *Eurasphalt & Eurobitume Congress*, Strasbourg, 1996.
- [309] J. Petersen, R. Robertson, J. Branthaver, P. Harnsberger, J. Duvall, S. Kim, D. Anderson, D. Christiansen, H. Bahia, R. Dongre, C. Antle, Binder characterization and evaluation. Volume 4: Test methods (Vol. 4, No. SHRP-A-370), 1994. <https://trid.trb.org/view/405683> (accessed November 24, 2022).
- [310] D. Anderson, D. Christensen, H. Bahia, R. Dongre, M. Sharma, C. Antle, *Binder Characterization and Evaluation Volume 3: Physical Characterization*, 1947.
- [311] G. Airey, B. Rahimzadeh, A. Collop, Linear viscoelastic limits of bituminous binders, *Journal of the Association of Asphalt Paving Technologists*. 71 (2002) 89–115.

- [312] A. Pronk, P. Hopman, Energy dissipation: the leading factor of fatigue, in: Highway Research: Sharing the Benefits, 1991: pp. 255–267.
- [313] E. Santagata, O. Baglieri, D. Dalmazzo, Investigating cohesive healing of asphalt binders by means of a dissipated energy approach, *International Journal of Pavement Research and Technology*. 10 (2017) 403–409.
- [314] A. Behl, G. Bharath, S. Chandra, Characterization of Fatigue Resistance of Warm Mix Binders Using Linear Amplitude Sweep Test, *International Journal of Pavement Research and Technology*. 15 (2022) 433–441. <https://doi.org/10.1007/S42947-021-00031-3>.
- [315] P. Teymourpour, H. Bahia, Linear Amplitude Sweep Test: Binder Grading Specification and Field Validation, Binder Expert Task Group Meeting. (2014).
- [316] Y. Yan, D. Hernando, B. Park, C. Allen, R. Roque, Understanding asphalt binder cracking characterization at intermediate temperatures: Review and evaluation of two approaches, *Constr Build Mater*. 312 (2021) 125163.
- [317] Y. Wang, Y. Kim, Development of a pseudo strain energy-based fatigue failure criterion for asphalt mixtures, *International Journal of Pavement Engineering*. 20 (2019) 1182–1192. <https://doi.org/10.1080/10298436.2017.1394100>.
- [318] C. Hintz, H. Bahia, Simplification of linear amplitude sweep test and specification parameter, *Transp Res Rec*. (2013) 10–16. <https://doi.org/10.3141/2370-02>.
- [319] E. Masad, V.T.F. Castelo Branco, D.N. Little, R. Lytton, A unified method for the analysis of controlled-strain and controlled-stress fatigue testing, *International Journal of Pavement Engineering*. 9 (2008) 233–246. <https://doi.org/10.1080/10298430701551219>.

- [320] M. Keentok, S.C. Xue, Edge fracture in cone-plate and parallel plate flows, *Rheol Acta*. 38 (1999) 321–348. <https://doi.org/10.1007/S003970050184>.
- [321] J. Wititanapanit, J. Carvajal-Munoz, G. Airey, Performance-related and rheological characterisation of natural rubber modified bitumen, *Constr Build Mater*. 268 (2021) 121058.
- [322] S. Rocha, J. Landi, A. Margaritis, G. Pipintakos, E. Freitas, C. Vuye, J. Blom, T. Tytgat, S. Denys, J. Carneiro, Physicochemical and Rheological Properties of a Transparent Asphalt Binder Modified with Nano-TiO₂, *Nanomaterials*. 10 (2020) 2152.
- [323] E. Deef-Allah, M. Abdelrahman, Balancing the performance of asphalt binder modified by tire rubber and used motor oil, *International Journal of Recent Technology and Engineering*. 8 (2019) 5501–5508. <https://doi.org/10.35940/ijrte.D8893.118419>.
- [324] Y. Yan, D. Hernando, B. Park, C. Allen, R. Roque, Understanding asphalt binder cracking characterization at intermediate temperatures: Review and evaluation of two approaches, *Constr Build Mater*. 312 (2021) 125163.
- [325] E. Deef-Allah, M. Abdelrahman, Thermal, chemical and rheological properties of asphalt binders extracted from field cores, *Innovative Infrastructure Solutions*. 7 (2022) 1–23. <https://doi.org/10.1007/S41062-022-00836-6>.
- [326] H. Bahia, H. Tabatabaee, T. Mandal, A. Faheem, Field evaluation of Wisconsin modified binder selection guidelines-Phase II, *Wisconsin Highway Research Program*, 2013.
- [327] Y. Ruan, R. Davison, C. Glover, An investigation of asphalt durability: Relationships between ductility and rheological properties for unmodified asphalts, *Pet Sci Technol*. 21 (2003) 231–254. <https://doi.org/10.1081/LFT-120016946>.

- [328] G. Rowe, Evaluation of the relationship between asphalt binder properties and non-load related cracking, *Journal of the Association of Asphalt Paving Technologists*. (2011) 649–663.
- [329] A. Bajaj, A. Epps Martin, G. King, C. Glover, F. Kaseer, E. Arámbula-Mercado, Evaluation and classification of recycling agents for asphalt binders, *Constr Build Mater*. 260 (2020) 119864. <https://doi.org/10.1016/j.conbuildmat.2020.119864>.
- [330] P. Osmari, L. Leite, F. Aragão, M. Cravo, L. Dantas, T. Macedo, Cracking resistance evaluation of asphalt binders subjected to different laboratory and field aging conditions, *Road Materials and Pavement Design*. 20 (2019) S663–S677. <https://doi.org/10.1080/14680629.2019.1618530>.
- [331] H. Wang, X. Liu, M. van de Ven, G. Lu, S. Erkens, A. Skarpas, Fatigue performance of long-term aged crumb rubber modified bitumen containing warm-mix additives, *Constr Build Mater*. 239 (2020). <https://doi.org/10.1016/j.conbuildmat.2019.117824>.
- [332] F. Nejad, E. Aflaki, M. Mohammadi, Fatigue behavior of SMA and HMA mixtures, *Constr Build Mater*. 24 (2010) 1158–1165. <https://doi.org/10.1016/j.conbuildmat.2009.12.025>.
- [333] H. Jia, H. Chen, Y. Sheng, J. Meng, S. Cui, Y. Kim, S. Huang, H. Qin, Effect of laboratory aging on the stiffness and fatigue cracking of asphalt mixture containing bamboo fiber, *J Clean Prod*. 333 (2022) 130120. <https://doi.org/10.1016/j.jclepro.2021.130120>.
- [334] A. Mohammad Asib, R. Rahman, P. Romero, M. Hoepfner, A. Mamun, Physicochemical characterization of short and long-term aged asphalt mixtures for low-temperature performance, *Constr Build Mater*. 319 (2022) 126038. <https://doi.org/10.1016/j.conbuildmat.2021.126038>.

- [335] M. Nobakht, M. Sakhaeifar, Dynamic modulus and phase angle prediction of laboratory aged asphalt mixtures, *Constr Build Mater.* 190 (2018) 740–751. <https://doi.org/10.1016/j.conbuildmat.2018.09.160>.
- [336] E. Oluwasola, M. Hainin, M. Aziz, Evaluation of asphalt mixtures incorporating electric arc furnace steel slag and copper mine tailings for road construction, *Transportation Geotechnics.* 2 (2015) 47–55. <https://doi.org/10.1016/j.trgeo.2014.09.004>.
- [337] H. Malladi, D. Ayyala, A. Tayebali, N. Khosla, Laboratory evaluation of warm-mix asphalt mixtures for moisture and rutting susceptibility, *Journal of Materials in Civil Engineering.* 04014162 (2015) 27–5.
- [338] P. Barghabany, J. Zhang, L. Mohammad, S.B. Cooper, S. Cooper, Chemical and Rheological Characterization of Asphalt Binders: A Comparison of Asphalt Binder Aging and Asphalt Mixture Aging, *Transportation Research Record: Journal of the Transportation Research Board.* 2676 (2022) 147–157. <https://doi.org/10.1177/03611981211067977>.
- [339] G. Shafabakhsh, M. Rajabi, A. sahaf, The fatigue behavior of SBS/nanosilica composite modified asphalt binder and mixture, *Constr Build Mater.* 229 (2019) 116796. <https://doi.org/10.1016/j.conbuildmat.2019.116796>.
- [340] N. Morian, E. Hajj, C. Glover, P. Sebaaly, Oxidative Aging of Asphalt Binders in Hot-Mix Asphalt Mixtures, *Transportation Research Record: Journal of the Transportation Research Board.* 2207 (2011) 107–116. <https://doi.org/10.3141/2207-14>.
- [341] S. Islam, G. R. N., S. Ravindranath, Performance Evaluation of Long-Term Laboratory-Aged Asphalt Mixtures Containing Different Molecular Structures of SBS Copolymers, *Journal of Materials in Civil Engineering.* 35 (2023). <https://doi.org/10.1061/JMCEE7.MTENG-15368>.

- [342] H. Ziari, A. Amini, A. Goli, The effect of different aging conditions and strain levels on relationship between fatigue life of asphalt binders and mixtures, *Constr Build Mater.* 244 (2020) 118345. <https://doi.org/10.1016/j.conbuildmat.2020.118345>.
- [343] M. Elseifi, L. Mohammad, H. Ying, S. Cooper III, Modeling and evaluation of the cracking resistance of asphalt mixtures using the semi-circular bending test at intermediate temperatures, *Road Materials and Pavement Design.* 13 (2012) 124–139. <https://doi.org/10.1080/14680629.2012.657035>.
- [344] J. Choudhary, B. Kumar, A. Gupta, Evaluation of engineering, economic and environmental suitability of waste filler incorporated asphalt mixes and pavements, *Road Materials and Pavement Design.* 22 (2021) 624–640. <https://doi.org/10.1080/14680629.2021.1905698>.
- [345] S. Sreedhar, E. Coleri, I. Obaid, V. Kumar, Development of a balanced mix design method in oregon to improve long-term pavement performance, *Transp Res Rec.* 2675 (2021) 1121–1137. <https://doi.org/10.1177/03611981211032222>.
- [346] W. Zhang, J. Tang, Z. Dong, T. Ma, M. Akber, X. Huang, J. Zhu, Y. Luan, Performance Characterization of Recycled-Asphalt Pavement with Stabilized Rubber–Modified Asphalt Using Balanced Mix Design Method, *Journal of Materials in Civil Engineering.* 32 (2020) 04020387.

LIST OF PUBLICATIONS

Journal Publications

- 1) **Chaudhary M**, Saboo N, Gupta A, Miljković M. Contribution of mineral filler to the fatigue damage behaviour of bituminous mastic. *Construction and Building Materials*. 2022 Jun 6; 334:127120.
- 2) **Chaudhary M**, Saboo N, Gupta A, Steineder M, Hofko B. Effect of analysis procedure and sample geometry on the fatigue life results of asphalt mastics from linear amplitude sweep test. *Mechanics of Time-Dependent Materials*. 2022 Feb 15:1-25.
- 3) **Chaudhary M**, Saboo N, Gupta A, Hofko B, Steineder M. Assessing the effect of fillers on LVE properties of asphalt mastics at intermediate temperatures. *Materials and Structures*. 2020 Aug; 53(4):1-6.

Collaborative Publications

- 1) Choudhary J, **Chaudhary M**, Gupta A. Applicability of multiple stress creep and recovery test for the analysis of fatigue resistance of bituminous mastics. *Petroleum Science and Technology*. 2023 Feb 2:1-21
- 2) **Chaudhary M**, Saboo N, Gupta A. Introduction of a new parameter to quantify the fatigue damage in asphalt mastics and asphalt binder. *Coatings*. 2021 Jul 9; 11(7):828.
- 3) Steineder M, Peyer MJ, Hofko B, **Chaudhary M**, Saboo N, Gupta A. Comparing different fatigue test methods at asphalt mastic level. *Materials and Structures*. 2022 Jun; 55(5):1-6.
- 4) Saboo N, Sukhija M, **Chaudhary M**. Relating asphalt binders response to LAS and LAOS tests at intermediate temperatures. *Mechanics of Time-Dependent Materials*. 2021 Mar; 25(1):21-35.

- 5) Saboo N, Prasad AN, Sukhija M, **Chaudhary M**, Chandrappa AK. Effect of the use of recycled asphalt pavement (RAP) aggregates on the performance of pervious paver blocks (PPB). *Construction and Building Materials*. 2020 Nov 30; 262:120581.

Conferences and Book Chapters

- 1) **Chaudhary M**, Saboo N, Gupta A, Miljković M. Influence of red mud filler on the fatigue behaviour of bituminous mastic. In *Green and Intelligent Technologies for Sustainable and Smart Asphalt Pavements 2021 Dec 24* (pp. 561-566). CRC Press.
- 2) **Chaudhary M**, Saboo N, Gupta A, Steineder M, Hofko B. Influence of filler-binder ratio and temperature on the Linear Viscoelastic (LVE) characteristics of asphalt mastics. In *Advances in Materials and Pavement Performance Prediction II 2020 Dec 8* (pp. 20-23). CRC Press.
- 3) **Chaudhary M**, Saboo N, Gupta A. Assessing the Suitability of Polyethylene Terephthalate (PET) in Bituminous Concrete Mixes. In *Proceedings of the Fifth International Conference of Transportation Research Group of India 2022* (pp. 495-506). Springer, Singapore.
- 4) Miljković M, **Chaudhary M**, Saboo N, Gupta A. Influence of filler on the behaviour of mastic in linear amplitude sweep. *Asphalt Innovation Symposium, 15–16 December 2021*. University of Antwerp, Faculty of Applied Engineering, Antwerp, Belgium.