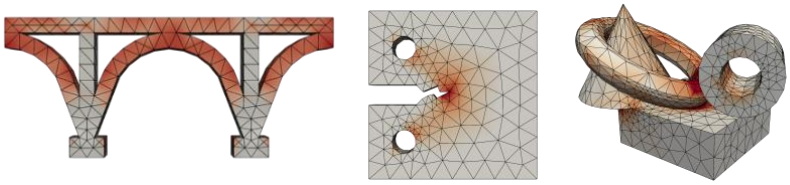
Dr Ado Farsi is a Research Associate in the Applied Modelling and Computation Group at Imperial College London, UK. His research involves simulating real materials on a computer to unveil the physical phenomena that can help solving industrial problems, optimise processes and lead to new discoveries in material science.

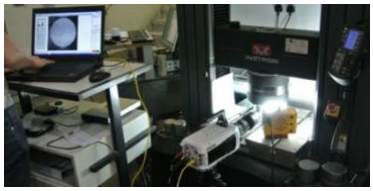
E-mail ado.farsi@imperial.ac.uk **Website** www.adofarsi.com

Skills

Stress analysis & Numerical simulations



Mechanical testing



Areas of expertise

Materials Ceramics, structural applications, non-destructive testing (micro indentations), mechanical properties and characterisation (three-point bending tests[1], compression tests[2], digital image correlation), modelling of catalyst supports (packing density[3,4], stress/deformations and fragmentation[2,5,6], shape optimisation, heat transfer).

Energy and Natural Resources Drilling technology (equipment design, borehole stability, jet drilling)[7,8]. Rock and soil mechanics (analysis and simulation of stresses and fractures).

Manufacturing Tabletting, powder compaction, catalyst supports.

Civil Engineering Modelling (structural analysis, fracture mechanics, geomechanics)[9]. Testing (three-point bending test, compression testing, digital image correlation and tracking). Breakwaters and tunnels.

Teaching Computational mechanics software for engineering modelling: finite element method (e.g. ABAQUS, MATLAB, Ansys, etc.), discrete element method and combined finite-discrete element method (e.g. Solidity). Introduction to coding: MATLAB, Python, C. Advance coding: MATLAB, Python.

References

1. Farsi, A. *et al.* Full deflection profile calculation and Young's modulus optimisation for engineered high performance materials. Scientific Reports **7**, 46190 (2017).
2. Farsi, A. *et al.* Strength and fragmentation behaviour of complex-shaped catalyst pellets: A numerical and experimental study. *Chem. Eng. Sci.* **213**, 115409 (2020).
3. Latham, J. P., Xiang, J., Farsi, A., Joulin, C. & Karantzoulis, N. A class of particulate problems suited to FDEM requiring accurate simulation of shape effects in packed granular structures. *Comput. Part. Mech.* (2019). doi:10.1007/s40571-019-00294-5
4. Farsi, A. *et al.* Simulation and characterisation of packed columns for cylindrical catalyst supports and other complex-shaped bodies. in *Springer Proceedings in Physics* **188**, (2017).
5. Farsi, A. *et al.* An application of the finite-discrete element method in the simulation of ceramic breakage: Methodology for a validation study for alumina specimens. in *Proceedings of the 4th International Conference on Particle-Based Methods - Fundamentals and Applications, PARTICLES 2015* (2015).
6. Farsi, A. *et al.* Does shape matter? FEMDEM estimations of strength and post failure behaviour of catalyst supports. in *5th International Conference on Particle-Based Methods - Fundamentals and Applications, PARTICLES 2017* (2017).
7. Latham, J. P., Farsi, A., Xiang, J., Clark, E. & Bakker, R. R. Numerical modelling of the influence of in-situ stress, rock strength and hole-profile geometry on the stability of Radial Water Jet Drill (RJD) boreholes. in *53rd U.S. Rock Mechanics/Geomechanics Symposium* (2019).
8. Farsi, A. Inverse analysis procedures and possible applications in drilling operations. (Politecnico di Milano, 2013).
9. Farsi, A., Bedi, A., Latham, J. P. & Bowers, K. Simulation of fracture propagation in fibre-reinforced concrete using FDEM: an application to tunnel linings. *Comput. Part. Mech.* (2019). doi:10.1007/s40571-019-00305-5