

Curriculum vitae

Dr. Abdelkader Filali

PERSONAL INFORMATION

First name: Abdelkader

Last name: Filali

Date of birth: 22 December 1982

Marital status: Married, 2 Children

Address: Ali Mendjeli, UV 16, Ilot 03, Building H1, N° 153 Constantine, Algeria

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ACADIMIC DIPLOMA

- 2014** **Doctorate in Mechanical Engineering** - Université des Frères Mentouri, Constantine, Algeria
Option: Energy Engineering
Thesis title: Dynamic and thermal behaviour of viscoelastic fluid in ducts of non-circular cross-section
- 2010** **Master of Applied Science in Mechanical Engineering** - University des Frères Mentouri, Constantine, Algeria
Option: Energy Engineering
Thesis title: Numerical modelling of turbulent reacting swirling flow in gas-turbine combustion chamber
- 2007** **Bachelor's in mechanical engineering** - Université des Frères Mentouri, Constantine, Algeria
Option: Energy Engineering
Thesis title: Simulation of non-reacting swirling flow in gas turbine combustion chamber

SKILLS AND EXPERIENCE

- Computational Fluid Dynamics including building complex 3D geometries with multi-block configurations and hybrid meshes of good quality, computational techniques, and advanced post-processing
- Numerical simulation of the flow and heat transfer of non-Newtonian fluids obeying different rheological models
- More than 10-year experience with ANSYS FLUENT and ANSYS POLYFLOW software
- RANS simulation of fluid dynamics, heat transfer, and multiphase flows (multi-fluid and single fluid Eulerian models) of higher degrees of complexity
- High Performance Computing HPC technologies for parallel processing
- Programming with FORTRAN language, basic knowledge of C++ and MATLAB

TEACHING ACTIVITIES

Assistant Professor

The National School of Polytechnic Constantine, ENPC, Department of Mechanical Engineering, Constantine, Algeria

Teaching activities:

- Lecturer for 3rd Year students - DAO course
- Lecturer for 4th Year students - CAO course
- Tutor for 4rd Year students - Programming with FORTRAN language
- Tutor for 4th Year students - Practical projects of Turbo-machinery
- Tutor for 4th Year students - Practical projects of Wind tunnel

Temporary Lecturer and tutor

February 2018-July 2018

Institut des Sciences et Technique Appliquées (ISTA), Université des Frères Mentouri, Constantine 1, Algeria

Teaching activities:

- Temporary Lecturer for 2nd Year students - Fluid Mechanics course
- Tutor for 2nd Year students - Fluid Mechanics course
- Temporary Lecturer for 1st Year students - Thermal (Heat Transfer) course
- Tutor for 1st Year students - Thermal (Heat Transfer) course

Tutor

October 2017-December 2017

Imperial College London, Chemical department, London, UK

Teaching activities:

- Tutor for 1st Year students - Fluid Mechanics & Heat/Mass Transfer courses

WORK EXPERIENCE AND RESEARCH PROJECTS CONDUCTED

Visiting Researcher Association

March 2018-Present

Imperial College London, Department of Chemical Engineering, London, UK

Objectives:

- Numerical simulation of Newtonian and non-Newtonian fluids in sudden expansion with curved Duct

Research Associate

March 2017 - February 2018

Imperial College London, Department of Chemical Engineering, London, UK

Project objectives:

- Numerical modelling and scaling of pseudo-plastic fluid in agitated cooling kettles
- Numerical modelling and scaling of start-up flow for lubricating grease in circular pipes

Research/Teaching Associate

The Petroleum Institute - A part of Khalifa University of Science and Technology, Mechanical department, Abu Dhabi, UAE

June 2015 -
December 2016

Project objectives:

- Gas dispersion modelling of gas mixture (i.e., H₂S, CO₂, CH₄...etc.) in well pad and plant gas processing facilities over complex 3D hilly terrain using HPC (High Performance Computing)

Researcher
September 2014-
June 2015

The Petroleum Institute - A part of Khalifa University of Science and Technology, Mechanical department, Abu Dhabi, UAE

Project objectives:

- Analysis and numerical modelling of solid-gas (Black powder-gas) flow in piping network using 1D code

Research Assistant
August 2010-
August 2014

The Petroleum Institute - A part of Khalifa University of Science and Technology, Mechanical department, Abu Dhabi, UAE

Project objectives:

- Numerical simulation of dip coating process using Bingham fluids
- Heat transfer and rheological behaviour of non-Newtonian fluids in ducts of various cross-section

Quality Control Engineer
November 2008-
July 2010

COJAAL company (Japanese consortium of Algerian Highway), Constantine, Algeria

Tasks:

- Daily inspection and checking for all quality related procedures such as: welding, bending, and stringing operations

AWARDS AND HONORS

- Ranked 1st among all undergraduate candidates in the national competition for admission to the Master program at Mechanical Engineering Department, Université Constantine 1, Algeria, 2007
- Ranked 1st among all master students for the final examinations, Mechanical Engineering Department, Université Constantine 1, Algeria, 2007-2008

MASTER'S STUDENTS SUPERVISION

- At the present I am the supervisor and co-supervisor for 4 Master's students at The National School of Polytechnic Constantine, ENPC, Constantine, Algeria

ADMINISTRATIVE/ORGANIZATIONAL EXPERIENCE

- Member of the organization committee for the conference << Journée Scientifiques sur les Sciences et l'Engineering JSSE'18, Constantine, Algeria, 09-10 Decembre, 2018 >>

REVIEWER

- International Journal of Mechanical Engineering and Automation

- Journal Engineering Science and Technology, an International Journal
- Journal of Natural Gas Science & Engineering
- Computational Thermal Sciences

LANGUAGES

- Arabic: mother tongue
- French: fluently written, read, and spoken
- English: fluently written, read, and spoken

PUBLICATIONS

➤ Recently Submitted journal papers

1. Benayad Z, Laouedj S, **Filali, A.**, “Numerical Investigation on the Cooling of Electronics Components with Synthetic Multi-Jets and Non-Sinusoidal Bi-periodic Forcing Functions”. *Journal of Applied Fluid Mechanics* [*Submitted 25/05/2018*]
2. Amghar, K., **Filali, A.**, Louhibi, M. A., Bouali, H., Salhi, N., Salhi, M., “Numerical study of turbulent heat transfer in a horizontal channel provided with square blocks: Effect of the blocks spacing. “. *Journal of Thermal Enginnerig* [*Submitted 05/03/2018*]

➤ Published journal papers

1. Zina, B., **Filali, A.**, Laouedj S., Benamara N., “Numerical Investigation of a Solar Air Heater (SAH) with Triangular Artificial Roughness Having a Curved Top Corner”. *Journal of Applied Fluid Mechanics*. Vol. 12, No. 6, November 2019. [Impact Factor: 1.090]
2. Eutamene S, Boudebous S, Berrahil F, Kholai O, Dahdi B, **Filali A.** “Unsteady Mixed Convection in a Cubic Lid-Driven Cavity Partially Heated from the Bottom. *Journal of Advanced Research in Fluid Mechanics and Thermal Sciences*“. Vol. 57, No. 2, pp. 275-287, 2019. [Impact Factor: 0.146]
3. Debbah, D., Kholai, O., **Filali, A.**, “Determination of a Hopf bifurcation of natural convection in a symmetric heated square cavity.” *International Journal of Heat and Technology*. Vol. 36, No. 4, pp. 1268-1275, 2018. [SJR 2017: 0.53]
4. **Filali, A.**, AlShehhi, M., Khezzar, L., Nemouchi, Z., “Numerical Computations of Thermally Developing Flow of Viscoelastic FENE-P Fluids Between Parallel Plates“. *Journal of Applied Fluid Mechanics*. Vol. 11, No. 1, pp. 1-9, 2018. [Impact Factor: 0.888]
5. **Filali, A.**, Khezzar, L., AlShehhi, M., “Numerical simulation of FENE-P viscoelastic fluids flow and heat transfer in grooved channel with rectangular cavities”. *Korea-Australia Rheology Journal*. Vol. 29, Issue 3, pp 195–205, 2017. [Impact Factor: 1.0]
6. AlMelhi, S. **Filali, A.**, Khezzar, L., AlShehhi, M., “Flow and Heat Transfer of a Giesekus Fluid in Plane and 3D Ducts “. *Heat Transfer—Asian Res*. Vol.46, Issue 8, pp. 2017;1–19. [Impact Factor: 0.58]

7. Kharoua, N., AlShehhi, M., Khezzar, L., **Filali, A.**, “CFD Prediction of Black Powder Particles’ Deposition in Vertical and Horizontal Gas Pipelines “. Journal of Petroleum Science and Engineering. Vol. 149, pp. 822–833, 2017. [Impact Factor: 1.873]
8. **Filali, A.**, Khezzar, L., AlShehhi, M.S., Kharoua, N., A One-D Approach for Modelling Transport and Deposition of Black Powder Particles in Gas Network. Journal of Natural Gas Science & Engineering. Vol. 28, pp. 241–253, 2016. [Impact Factor: 2.718]
9. Khezzar, L., **Filali, A.**, AlShehhi, M., “Flow and Heat Transfer of FENE-P Fluids in Ducts of Various Shapes: Effect of Newtonian Solvent Contribution “. Journal of Non-Newtonian Fluid Mechanics. Vol. 207, pp. 7 – 20, 2014. [Impact Factor: 2.536]
10. **Filali, A.**, and Khezzar, L., “A Finite Element Investigation of Elastic Flow Asymmetries in Cross-Slot Geometries Using a Direct Steady Solver”, Fluid Dynamics & Materials Processing, Vol. 9, pp.307-329, 2013. [Impact Factor: 1.06]
11. **Filali, A.**, Khezzar, L., Nemouchi, Z., Siginer, D.A., “Graetz Problem with Non-linear Viscoelastic Fluids in Non-Circular Tubes“. International Journal of Thermal Sciences. Vol. 61, pp. 50-60, 2012. [Impact Factor: 3.615]
12. **Filali, A.**, Khezzar, L., Mitsoulis, E., “Some experiences with the numerical simulation of Newtonian and Bingham fluids in dip coating” Computers & Fluids, Vol. 82, pp. 110-121, 2013. [Impact Factor: 2.313]
13. **Filali, A.**, Khezzar, L., “Numerical Simulation of the Graetz Problem in Ducts with Viscoelastic FENE-P Fluids” Computers & Fluids, Vol. 84, pp. 1-15, 2013. [Impact Factor: 2.313]

➤ **Refereed Conference Proceedings**

1. Zina, B., **Filali, A.**, Benamara N., Laouedj. S. Numerical study of a solar air heater with triangular artificial roughness having a curved top corner. ICAME, 4th International Conference on Advances in Mechanical Engineering, Istanbul 2018, 19-21 December 2018.
2. **Filali, A.**, Characterization of droplet sizes in cross-junction microfluidic device. Journée Scientifiques sur les Sciences et l’Engineering JSSE’18, Constantine, Algeria, 09-10 Decembre, 2018
3. Amghar, K., **Filali, A.**, Louhibi, M. A., Bouali, H., Salhi, N., Salhi, M., Turbulent flow and heat transfer in confined channel flow past four square bars arranged side by side. IMAT3E: International Meeting on Advanced Technologies in Energy and Electrical Engineering Fez, Morocco, November 22-23, 2018
4. Khezzar, L. **Filali, A.**, Omar, K. M, “Flow instability in a plane sudden expansion followed by a curved duct.” 71st Annual Meeting of the APS Division of Fluid Dynamics. KP1.00110, November 18–20, 2018; Atlanta, Georgia
5. Belaid, A., Gama, A., **Filali, A.**, Arrif, T., M. Bouakba, B. Bezza. The effect of rectangular heliostat shape ratio on the spiral layout performance of a solar tower thermal power plant Conference: 18th International Multidisciplinary Scientific GeoConference SGEM 2018, 03 – 06 December, 2018, Hofburg, Vienna, Austria.
6. Bouzennada, T., Mechighel, F., **Filali, A.**, Ismail, T., Numerical study of influence of casting speed in solidification process for pure metal International Seminar in Industrial Engineering and Applied Mathematics (SGIMA'2018) Skikda - Algeria, October 23 & 24, 2018

7. **Filali, A.**, Khezzar, L. AlShehhi, M., Flow behavior of FENE-P fluids in grooved parallel plates with transverse cavities. International Mechanical Engineering Congress & Exposition IMECE2016, November 11-17, 2016, Phoenix, Arizona, US.
8. Rodgers P., Eveloy V., **Filali A.**, Joshi N., CFD Modeling of Environmental Gas Dispersion over Hilly Terrain, in Proceedings of the 11th Conference on Sustainable Development of Energy, Water and Environment Systems (SDEWES 2016), September 4 – 9, 2016, Lisbon, Portugal.
9. AlMelhi, S., **Filali, A.**, Khezzar, L., AlShehhi, M., Heat-Transfer Analysis of Visco-Elastic Giesekus Fluid in a Duct Between Parallel Plates and in a Straight Pipe of a Circular Cross-Section. International Mechanical Engineering Congress & Exposition IMECE 2015. November 13-19, 2015, Houston, TX, USA.
10. **Filali, A.**, Khezzar, L., AlShehhi, M.S., Kharoua. N., A one Dimensional Model to Track the Black Powder Dispersion and Deposition within Gas Transmission Network. The Abu Dhabi International Petroleum Exhibition and Conference ADIPEC 2015, November 9 – 12th, 2015 Abu Dhabi, United Arab Emirates.
11. **Filali, A.**, Nemouchi, Z., Khezzar, L., “Écoulement tourbillon dans une chambre de combustion“. In: 5th International Congress of Mechanical Engineering CAM 2015, El-Oued, Algeria. October 25-29, (2015).
12. **Filali, A.**, and Khezzar, L., Modeling of non-Newtonian fluid using ANSYS POLYFLOW code - Different applications. 3rd ANSYS User Meeting Conference 25th November 2015. Nassima Royal Hotel, Dubai, UAE.
13. **Filali, A.**, Khan, T. S., Khezzar, L., AlShehhi, M., Approaches to Understanding of Black Powder Movement & Dispersion. ADRAC Abu Dhabi International Research & Development Academic Conference & Exhibition, 24-26 February 2014.
14. **Filali, A.**, Khezzar, L., Nemouchi, Z., Entry flows for FENE-P fluids in a plan passage for constant heat flux & wall temperature boundary conditions. Proceedings of CONV-14: Int. Symp. on Convective Heat and Mass Transfer, June 8 – 13, 2014, Turkey.
15. **Filali, A.**, Khezzar, L., Nemouchi, Z., Finite element simulation of the Graetz problem in an elliptic duct for a viscoelastic fluid. Proceedings of CONV-14: Int. Symp. on Convective Heat and Mass Transfer, June 8 – 13, 2014, Turkey.
16. **Filali, A.**, and Khezzar, L., A Finite Element Investigation of Elastic Flow Asymmetries in Cross-Slot Geometries Using a Direct Steady Solver. 1st ANSYS User Meeting Conference 7th November 2013. Radisson Blue Hotel, Dubai, UAE.
17. **Filali A.**, Khezzar, L., Pinho F. T., Alves M. A., Purely Elastic Flow Asymmetries in Cross-slot Geometry- Are They Always Present?. Proceedings of CHT-12 ICHMT International Symposium on Advances in Computational Heat Transfer, England, Bath, July 1-6, (2012).
18. **Filali, A.**, Khezzar, L., Siginer, D.A., Nemouchi, Z., “Graetz Problem using FENE-P Fluids without viscous dissipation“. Proceedings of ASME 2012 International Mechanical Engineering Congress & Exposition IMECE2012, November 9-15, 2012, Houston, Texas, USA.
19. **Filali, A.**, Khezzar, L., Mitsoulis, E., “Numerical Modeling of the Dip Coating Problem“. Proceedings of ASME 2012 International Mechanical Engineering Congress & Exposition IMECE2012, November 11-17, 2012, Houston, Texas, USA.

20. **Filali, A.,** Khezzar, L., Siginer, D.A., Nemouchi, Z., “Numerical simulations of the axisymmetric Graetz problem using the viscoelastic PTT model“. In: 3rd International congress of mechanical engineering CAM 2011, Guelma, Algeria. November 14-17, (2011).
21. **Filali, A.,** Khezzar, L., Siginer, D.A., Nemouchi, Z., “Graetz problem in ducts of circular and some non-circular cross-sections with viscoelastic fluids“. In: Proceedings of ASME 2011 International Mechanical Engineering Congress & Exposition IMECE2011, November 11-17, 2011, Denver, Colorado, USA.

➤ Seminar and presentations

1. **Filali, A.,** and Khezzar, L., AlShehhi, M., Flow behavior of FENE-P fluids in grooved parallel plates with transverse cavities. 4th ANSYS User Meeting Conference 24th November 2016. Sofitel Abu Dhabi Corniche, Abu Dhabi, UAE.
2. **Filali, A.,** Khezzar, L., Nemouchi, Z., Swirling flow in Gas Turbine Combustion Chamber. MEEG 595 Graduate Seminar I - Fall 2015. The Petroleum Institute, Abu Dhabi, UAE.

REFERENCES

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