

# Mathematical Fluid Mechanics 2026

## University of Strathclyde

Workshop Programme

### Monday 14 September 2026

| Time               | Session                            | Speaker                                                                     | Talk title                                                                                                                                             |
|--------------------|------------------------------------|-----------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| 10:00–10:15        | Opening Remarks                    | Laura Miller / Apala Majumdar                                               | Workshop Welcome                                                                                                                                       |
| 10:15–11:00        | <b>Keynote 1</b>                   | Raimondo Penta<br><i>(University of Glasgow)</i>                            | Viscous and liquid crystals fluid flow in porous composites - Recent advances and further perspectives                                                 |
| <b>11:00–11:30</b> | <b>Coffee</b>                      |                                                                             |                                                                                                                                                        |
| 11:30–12:15        | <b>Keynote 2</b>                   | Gaetano Napoli<br><i>(Università degli Studi di Napoli "Federico II")</i>   | Nonholonomic Active Matter: Velocity-Orientation Locking in a Continuum with Vector Microstructure                                                     |
| 12:15–12:35        | <b>Contributed Talk 1 (online)</b> | Muhammad Roshan<br><i>(SRM Institute of Science and Technology Chennai)</i> | Mathematical modeling of electroosmotic transport of bodily fluids through an annular passage between two peristaltic tubes: applications in endoscopy |
| 12:35–12:55        | <b>Contributed Talk 2 (online)</b> | Davood Shadmani<br><i>(Independent Researcher /Outlier AI)</i>              | Range-Complete Realified Operator Bridges for Strong Uniqueness in the Three-Dimensional Navier-Stokes Equations                                       |
| <b>12:55–14:00</b> | <b>Lunch</b>                       |                                                                             |                                                                                                                                                        |
| 14:00–14:45        | <b>Keynote 3</b>                   | Sarka Necasova<br><i>(Czech Academy of Sciences)</i>                        | On the problem of interaction of fluid with the structure                                                                                              |
| 14:45–15:30        | <b>Keynote 4 (online)</b>          | Arnab Roy<br><i>(Basque Centre for Applied Mathematics)</i>                 | Time-periodic solutions for a multilayered fluid–structure interaction system                                                                          |
| <b>15:30–16:00</b> | <b>Coffee</b>                      |                                                                             |                                                                                                                                                        |
| 16:00–16:20        | <b>Contributed Talk 3</b>          | Edmund Chadwick<br><i>(University of Salford)</i>                           | Existence and smoothness of the Navier-Stokes equation using the Boundary Integral Method                                                              |
| 16:20–16:40        | <b>Contributed Talk 4</b>          | Xintong Ji<br><i>(University College London)</i>                            | Theoretical analysis of Stokes flow through a sharp-cornered cross-slot                                                                                |
| 16:40–17:00        | <b>Contributed Talk 5</b>          | Martin Kalousek<br><i>(Czech Academy of Sciences)</i>                       | Analysis of bi-fluid systems                                                                                                                           |
| <b>17:00–18:00</b> | <b>Poster Session</b>              | Mohammed Alwady<br><i>(University of Glasgow)</i>                           | Multiscale Modelling of Passive Nematic Liquid Crystals in Porous and Composite Media                                                                  |
|                    |                                    | Sam Bainbridge<br><i>(University of Manchester)</i>                         | Nematic Liquid Crystal Configurations in Triangular Confinement                                                                                        |
|                    |                                    | Asala Al Wardi<br><i>(University of Edinburgh)</i>                          | Modelling Approaches for Ozone-Based Sterilisation Flow Dynamics                                                                                       |

| Time | Session | Speaker                                                      | Talk title                                                                                 |
|------|---------|--------------------------------------------------------------|--------------------------------------------------------------------------------------------|
|      |         | Sava Popescu<br><i>(University of Strathclyde)</i>           | Studying the Vasculature of Lower Limb Amputees Using Computational Fluid Dynamics         |
|      |         | Sheila Legus-Christman<br><i>(University of Strathclyde)</i> | Investigation of Haemodynamic factors Influencing Intracranial Aneurysm Risk and Treatment |

## Tuesday 15 September 2026

| Time               | Session                    | Speaker                                                        | Talk title                                                                                                                                              |
|--------------------|----------------------------|----------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| 10:00–10:45        | <b>Keynote 5</b>           | Igor Chernyavsky<br><i>(University of Manchester)</i>          | Does geometry shape transport in placental mammals? A story with a twist                                                                                |
| <b>10:45–11:15</b> | <b>Coffee</b>              |                                                                |                                                                                                                                                         |
| 11:15–12:00        | <b>Keynote 6</b>           | Boris Muha<br><i>(University of Zagreb)</i>                    | Range Failure, Resolvent Growth, and Resonance in Partially Dissipative Systems                                                                         |
| 12:00–12:20        | <b>Contributed Talk 6</b>  | Ondrej Kreml<br><i>(Czech Academy of Sciences)</i>             | Steady Navier-Stokes-Fourier system with general dependence of viscosities on temperature                                                               |
| 12:20–12:40        | <b>Contributed Talk 7</b>  | Anna Lancmanová<br><i>(Czech Academy of Sciences)</i>          | Numerical simulations of respiratory problems                                                                                                           |
| 12:40–13:00        | <b>Contributed Talk 8</b>  | Hannah-May D'Ambrosio<br><i>(University of Glasgow)</i>        | Two-layer viscous gravity currents: self-similar and travelling wave solutions                                                                          |
| <b>13:00–14:00</b> | <b>Lunch and Posters</b>   |                                                                |                                                                                                                                                         |
| 14:00–14:45        | <b>Keynote 7</b>           | Sarah Waters<br><i>(University of Oxford)</i>                  | Applications of fluid mechanics in regenerative medicine                                                                                                |
| 14:45–15:30        | <b>Keynote 8</b>           | Tomas Bodnar<br><i>(Czech Academy of Sciences)</i>             | Numerical simulations of turbulent flow in a simple Ventricular Assist Device                                                                           |
| <b>15:30–16:00</b> | <b>Coffee</b>              |                                                                |                                                                                                                                                         |
| 16:00–16:20        | <b>Contributed Talk 9</b>  | Marianna Pepona<br><i>(Durham University)</i>                  | Effect of constitutive law on the erythrocyte membrane response                                                                                         |
| 16:20–16:40        | <b>Contributed Talk 10</b> | Niraj Prasad<br><i>(Newcastle University)</i>                  | Experimental and numerical investigation of mode-2 internal solitary waves with multi-humped structure in three-layer stratified flows                  |
| 16:40–17:00        | <b>Contributed Talk 11</b> | Vit Uhlíř<br><i>(Czech Technical University Prague)</i>        | Numerical simulations of turbulent heat transfer                                                                                                        |
| 17:00–17:20        | <b>Contributed Talk 12</b> | Abigail Allison<br><i>(University of Strathclyde)</i>          | A Multiscale Homogenization Framework for Assessing Porosity-Driven Changes in Corneal Mechanics, with Extensions to Bacterial and Antibiotic Transport |
| 17:20–17:40        | <b>Contributed Talk 13</b> | Kuntal Bhandari (Online)<br><i>(Czech Academy of Sciences)</i> | Dissipative solutions to a Beris-Edwards type model for compressible nematic liquid crystals                                                            |
| 17:40–18:00        | <b>Contributed Talk 14</b> | Teresa Mautone<br><i>(Gran Sasso Science Institute)</i>        | Thermal regulation of irregular particles: a comparison with idealised spheres                                                                          |

# Wednesday 16 September 2026

| Time          | Session           | Speaker                                                            | Talk title                                                                                                            |
|---------------|-------------------|--------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|
| 09:30–10:15   | Keynote 9         | Adélia Sequeira<br><i>(University of Lisbon)</i>                   | From Medical Imaging to Patient-Specific Hemodynamics in Cerebral Aneurysms: A Variational Data Assimilation Approach |
| 10:15–11:00   | Keynote 10        | Saumya Bajpai<br><i>(Indian Institute of Technology Goa)</i>       | A Three-Step Discontinuous Galerkin Method for the Kelvin-Voigt Viscoelastic Flow Model                               |
| 11:00–11:30   | Coffee            |                                                                    |                                                                                                                       |
| 11:30–12:15   | Keynote 11        | Celine Grandmont<br><i>(Sorbonne University &amp; Inria Paris)</i> | Some fluid-structure interaction problems for biomechanical problems: modeling, theoretical and numerical issues      |
| 12:15–13:00   | Keynote 12        | Gennady Mishuris<br><i>(Aberystwyth University)</i>                | Hydraulic Fracturing: What Fluid Mechanics Teaches Fracture Mechanics                                                 |
| 13:00–14:00   | Lunch             |                                                                    |                                                                                                                       |
| 15:00 onwards | Glasgow Excursion |                                                                    | Visit to Glasgow Cathedral, George Square and other Glasgow Central Landmarks                                         |