GERC/MultiForm Talk template:

Subtitle

Authors

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Research @ University of Nottingham

- Interdisciplinary research centre on porous media energy applications
- **Mathematics**, Engineering, Chemistry
- Applications: Carbon Capture and Storage, Unconventional reservoirs, Geothermal, Li-ion batteries
- Pore-scale modelling, Upscaling, Porous media characterisation

Multiscale Fluid Dynamics and Porous Media Group

`www.multiform.xyz`

- Non-Fickian transport and mixing[1]
- **Heterogeneous reactions, adsorption, deposition**[2]
- Conjugate heat/mass transfer[3]
- Particulate flows[4], suspensions

[1] DENTZ M., HIDALGO J., ICARDI M., Mechanisms of Dispersion in Porous Media. Journal of Fluid Mechanics, 2018.

[2] BOCCARDO G., CREVACORE E., SETHI R., ICARDI M., A robust upscaling of the effective particle deposition rate in porous media. Journal of Contaminant Hydrology, 2018.

[3] MUNICCHI F., ICARDI M., Generalised Multi-Rate Models for conjugate transfer in heterogeneous materials, arXiv preprint

[4] ICARDI M., NIASAR V., SCHREYER L., Coupled processes in charged porous media - from theory to applications, Transport in Porous Media. 2019.

Governing equations

Transport of concentration field in the fluid, u, throughout the porous media with binding of solute to the surface, s:

$$\frac{\partial u}{\partial t} + \underline{v} \cdot (\nabla u) - D_m \nabla^2 u = 0,$$

Governing equations

The boundary condition for the reactive surface is given by:

$$-D\nabla_n u = \underbrace{K_a f_i\left(\frac{s}{s_{ref}}\right)u}_{adsorption} - \underbrace{K_d f_j\left(\frac{u}{u_{ref}}\right)s}_{desorption} = \frac{\partial s}{\partial t}.$$

Example illustrations

To center the figures and make them larger than the space allowed for text use the command
makebox

Conclusions

- something
- something else
- etc...

Future work:

- improving these templates
- etc...