Thursday 2nd August
-12.15pm-

Measurement and simulation of the non-local dispersion tensor in porous media.

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Dispersion describes the phenomenon whereby particles on the same streamline separate during flow. The physics of dispersion is governed by stochastic processes arising from the interplay between advective velocity gradients, molecular diffusion and boundary layer effects [1]. The dispersion tensor, D*, is a local measurement in the sense that it does not depend on positional relationships and is measured as time asymptotes [2]. For situations where the length- and time-scales on which transport occurs are not much larger than the scale of the fluctuations in the velocity field, a non-local description is required [3]. The tensor is written as: $\mathbf{D}^{*}_{\mathrm{NL}}(\mathbf{R},\tau)=\left\langle \mathbf{u}(\mathbf{r},0)\overline{P}_{\mathbf{r}}(\mathbf{R},\tau)\mathbf{u}(\mathbf{r}+\mathbf{R},\tau)\right\rangle$

Experimental Estimations of Single Molecule SERS Enhancement Factors

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Proper estimations of single-molecule enhancement factors (SMEF) in SERS are coming of age due to development of recent experimental techniques that allow a more reliable identification of single molecule events. The magnitude of the SMEF has been subject to much discussion and controversy in the past -with SMEFs quoted as high as 1014- which ultimately led to difficulties explaining SERS as a purely electromagnetic effect. Moreover, previous estimates of SERS EFs show a large variance of many orders of magnitude. These discrepancies were identified to -most likely- be due to a number of often fairly general shortcomings which most of the previous attempts have been prone to: vague definitions, varying contexts, and lack of proper reference cross sections.

Venues
Rankine Brown 106, Victoria University of Wellington
Video Conference Room, C-Block, IRL, Gracefield Site
Lvl-3 lecture theatre (A309), ELEC Dept Building, Canterbury University
Turitea R1.07, Massey University
Conference Room 2, Otago University

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