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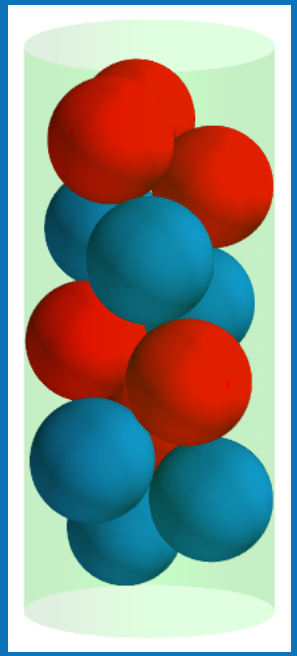
Theory of rotational *columnar structures* of soft spheres

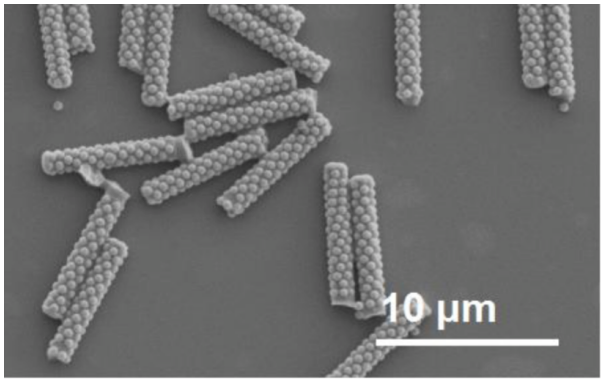


September 2, 2018 | Jens Winkelmann

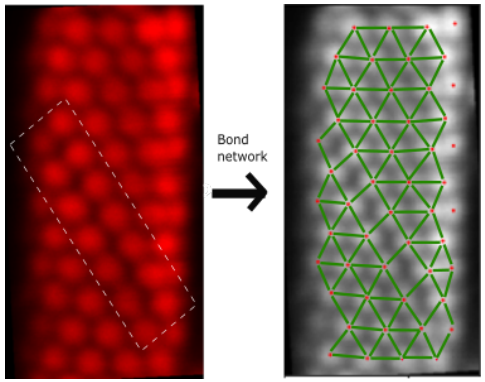
Co-authors: A. Mughal, D.B. Williams, D. Weaire and S. Hutzler

Why should YOU care about columnar structures?

Foam



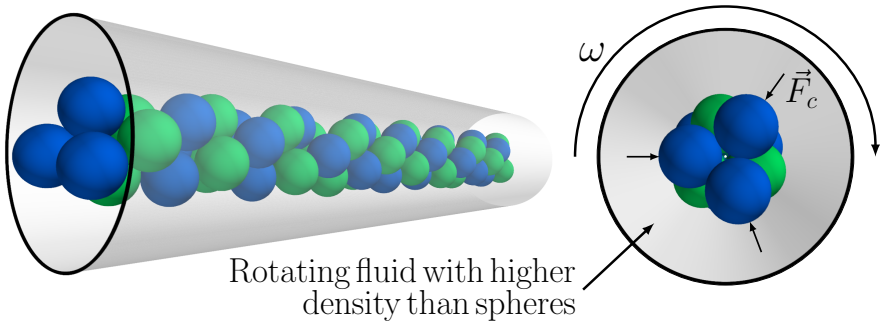
Micro-rods
Wu *et al.*; J Am Chem Soc 139, 5095–5101 (2017)

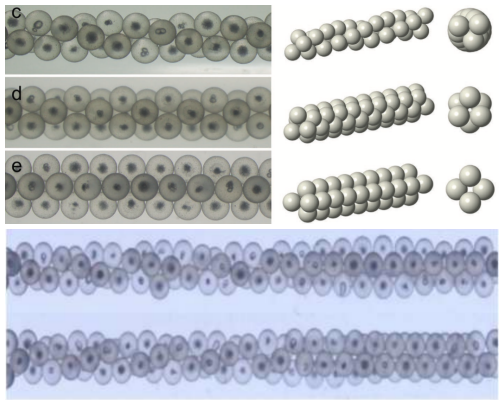


Optical metamaterial
Tanjeem *et al.*(**Harvard**); Bull Am Phys Soc (2018)

New method by Lee *et al.*:Columnar structures in rotating fluid

Lee *et al.* Advanced Materials 29, 1704274 (2017)



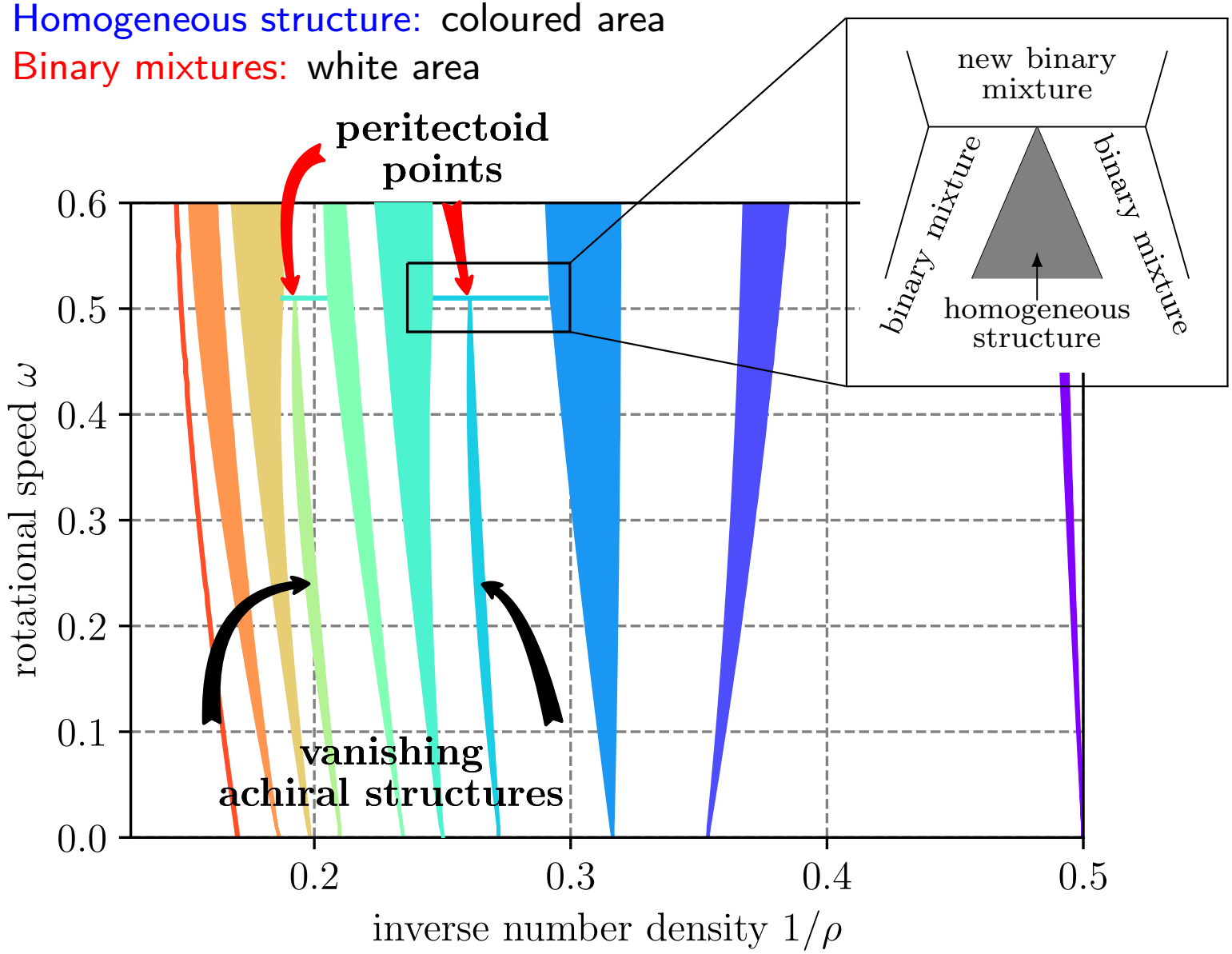


Homogeneous structures

Binary mixtures

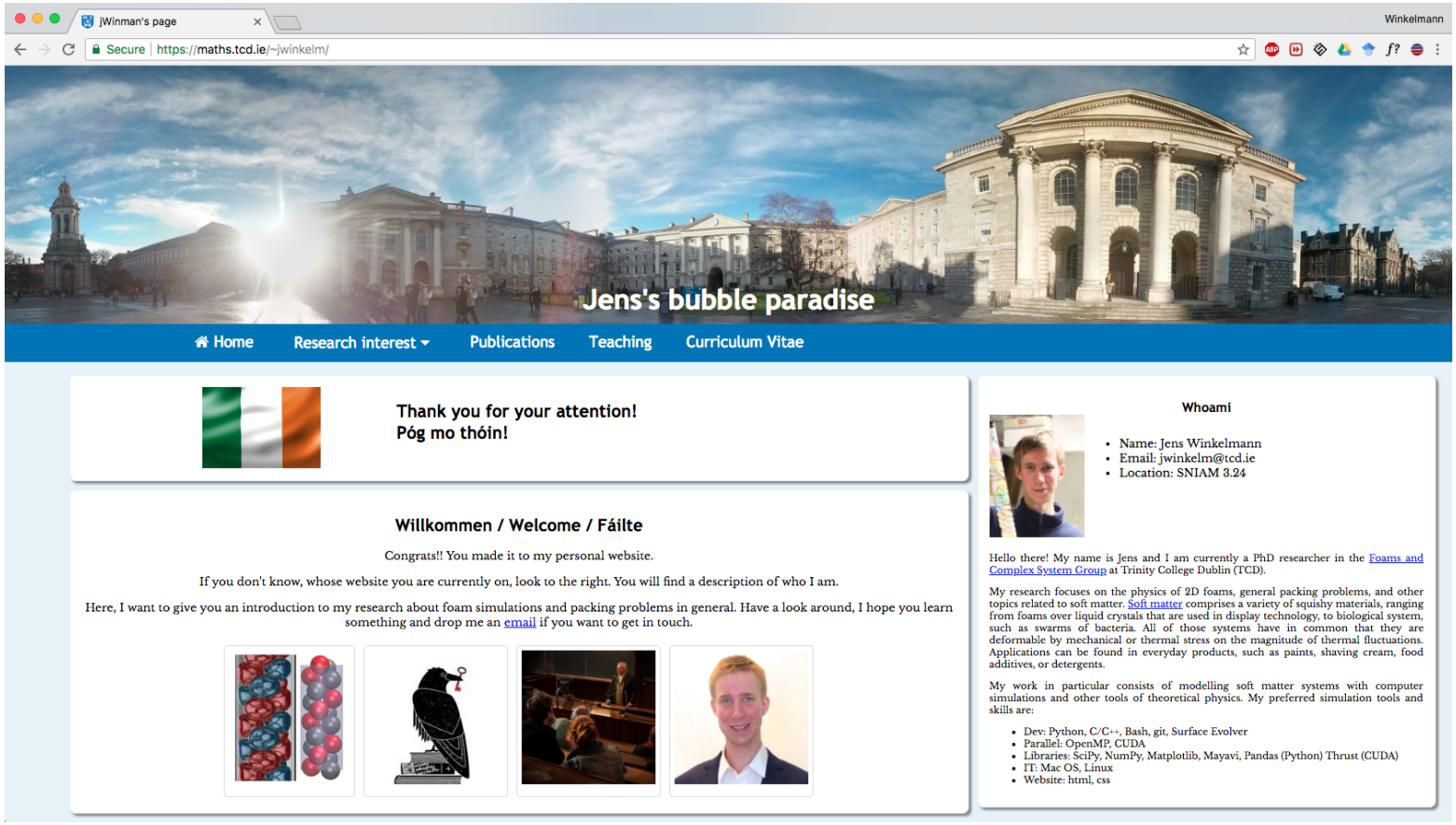
Phase diagram with *peritectoid points*

- Homogeneous structure: coloured area
- Binary mixtures: white area



Take-home messages:

- *Analytic* energy calculations for columnar soft sphere structures
- Phase diagram where achiral structures vanish in *peritectoid points*



`https://www.maths.tcd.ie/~jwinkelm`