

# Workshop on Flow-Induced Crystallisation in Polymers

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Monday 20th - Wednesday 22nd January 2020  
Leeds and Bradford, UK

## Monday 20 Jan

**Location: Maths Level 8, MALL 1 & 2, School of Mathematics, Univ. Leeds (Register at the main entrance to the School of Mathematics).**

10:30-11:15 Arrival, coffee, informal discussions and RepTate assistance.

11:15 Welcome and introductions

11:30 Jaap Den Doelder, Dow and TU/e, *Flow-induced crystallization: why industry should care.*

### 12:00-13:00 Lunch

13:00 Greg Rutledge, MIT, *Simulation of Flow-Induced Crystallization at Atomistic and Molecular Scales.*

13:30 Phil Coates, University of Bradford, *In-situ studies of structure development in micromoulding and solid phase orientation processing of polymers.*

14:00 Gerrit Peters, TU/e, *Flow-Induced Crystallization in Polypropylene: how processing dominates structure development.*

14:30 Daniela Mileva, Borealis, *Cast-film processing effects of isotactic polypropylene homo- and copolymers based on different catalysts.*

### 15:00-15:30 Coffee

15:30 Ron Larson, University of Michigan, *Role of Nematic Order and Chain Tension in Nucleation and Growth of Polyethylene Crystals.*

16:00 Charley Schaefer, University of York, *Silk: A natural example of a sticky entangled polymer .*

16:30 Oleksandr Mykhaylyk, University of Sheffield, *Mechano-Optical Rheology of Polymers and Soft-Matter Materials .*

**Evening: No session**

## Tuesday 21 Jan

**Location: Maths Level 8, MALL 1 & 2, School of Mathematics, Univ. Leeds**

8:45 Julie Kornfield, Caltech, *A conceptual model to capture the remarkable features of the "highly-oriented skin"*

9:15 Richard Graham, University of Nottingham, *Multiscale modelling of flow-induced crystallisation in polymers.*

9:45 Alicyn Rhoades, Penn State Behrend, *Flow-Induced Crystallization in PEEK: Molecular Weight Effects and Accelerated Kinetics at Low Temperatures.*

10:15 Miguel Cordova, Sabic, *Is shear-induced crystallization driving morphology in impact polypropylene?*

### **10:45-11:15 Coffee**

11:15 Scott Milner, Penn State, *Experimental and Theoretical Nucleation Barriers for Polyolefins*

11:45 Wonchalerm Rungswang, SCG Chemicals, *TBC.*

12:15 Qiyun Tang, Institute of Theoretical Physics, Georg-August Universität Göttingen, *Fast evaporation enables 2D polymer single crystals.*

### **12:45-13:45 Lunch**

13:45 Jorge Ramirez, Universidad Politecnica de Madrid, *Introduction to RepTate.*

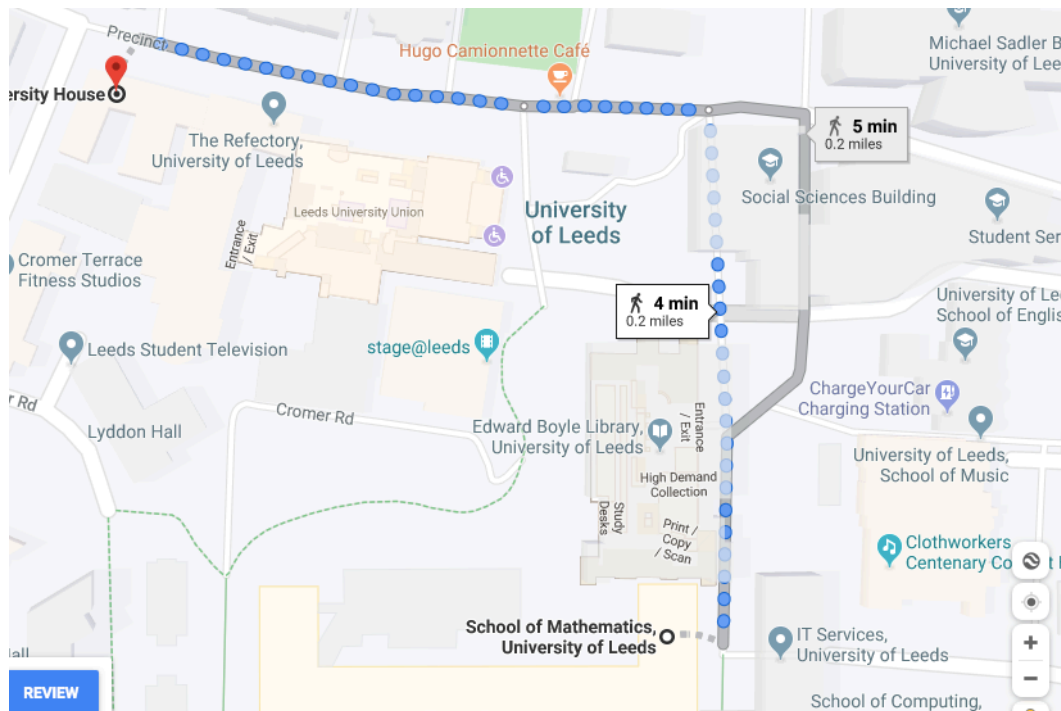
14:00 Richard Graham, University of Nottingham, *Modelling FIC in RepTate.*

14:15 RepTate demonstration and discussion

### **15:00-15:30 Coffee**

15:30 RepTate demonstration and discussion

**18:45 Workshop dinner, University House, University of Leeds, LS2 9JT.**



## Wed 22 Jan

8:30-9:00 Transport to Bradford- Coach pick-up at 8:30 at meet in the reception of the Radisson Blu Hotel (LS1 8TL)

9:00 Arrival and introductions

9:30 Tim Gough, University of Bradford, *Introduction to Bradford Polymer IRC*

9:45 Max Babenko, University of Bradford, *Linkam studies of Flow Induced Crystallisation.*

10:05 Max Babenko, University of Bradford, *Flow Induced Crystallisation in Injection Moulding.*

### **10:30 – 11:00 Coffee**

11:15 *Interactive lab demo #1 – see table below for group timings.*

11:50 *Interactive lab demo #2 – see table below for group timings.*

### **12:30 to 13:30 Lunch (with poster session)**

13:30 *Interactive lab demo #3 – see table below for group timings.*

14:10 *Interactive lab demo #4 – see table below for group timings.*

### **15:00 – 15:15 Coffee**

15:15 Richard Graham, University of Nottingham. *Round table discussion – next steps for flow induced crystallisation modelling, experiments and industrial impact.*

**17:00 Close**

<b>Activity</b>	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>
<b>Micro and ultrasonic moulding (WB11)</b>	11:15	14:10	13:30	11:50
<b>Flow Induced Crystallisation (WB11)</b>	11:50	11:15	14:10	13:30
<b>High shear rheology (WB11)</b>	13:30	11:50	11:15	14:10
<b>Thermal analysis of 3D printing (WB17)</b>	14:10	13:30	11:50	11:15

All Wednesday activities will be held within the Polymer IRC laboratories at the University of Bradford (number 3 on pdf map).

All talks held in Richmond Building Room WB19.

Maps at <https://www.bradford.ac.uk/media-v8/site/global-content-assets/city-campus-map-oct-2017.pdf>