

Krakow School of Interdisciplinary PhD Studies <KISD>
invites PhD students and members of the research staff
to attend the series of guest lectures given by:

Profesor Wuge Briscoe

University of Bristol, United Kingdom

1. Intermolecular and Surface Forces

An advanced course, introducing molecular and surface forces, with simple mathematical descriptions and key equations and examples of recent experimental studies. DLVO and non-DLVO forces will be discussed. These interactions underpin colloids, surface chemistry, and materials science.

2 hours of lectures with 1 hour workshop

2. Scaling arguments in polymer physics

The course will introduce de Gennes' scaling arguments in polymer physics, deriving expressions for the spring constant, confinement energy, and mesh size of polymer solutions in a semi-dilute regime.

2 hours of lectures

3. Introduction to XRR

A brief overview of X-rays, interactions between X-rays with atoms and molecules, leading to XRR from the surface, with a couple of examples of XRR studies of soft nanofilms. Guidance for synchrotron beam time proposals to EU central facilities (e.g. ESRF (France) and Diamond (UK)) may also be provided to interested students.

1 hour of lectures

Schedule:

• Day 1 (Monday 7th April):

Intermolecular and Surface Forces

- Lecture 1 (9:00 - 9:45)
- 10-15 min break and questions
- Lecture 2 (10:00 - 10:45)
- Questions

Introduction to XRR

- Lecture 1 (11:45 - 12:30)
- 10-15 min
- Further discussions on synchrotron X-ray scattering proposals

• Day 2 (Tuesday 8th April)

Scaling arguments in polymer physics

- Lecture 1 (9:00 - 9:45)
- 10-15 min break and questions
- Lecture 2 (10:00 - 10:45)
- Questions

Intermolecular and surface forces Workshop

- Workshop (11:45 - 12:30)

Event venue:

ICSC PAS, ul. Niezapominajek 8, 30-239 Kraków

Seminar room, 1st floor

Wuge Briscoe is a Professor of Physical Chemistry at the University of Bristol. After his PhD at the University of South Australia, he spent several years in Oxford, as an EPSRC Postdoctoral Fellow at Life Science Interfaces and a (Guy Newton) Junior Research Fellow at Wolfson College, before joining Bristol. The central theme of his current research is the correlation between soft matter surface structures and interactions these surface structures mediate in simple, complex and nano fluids. Such research has implications for fundamental aspects of nanoscience, as well as biolubrication, bacterial membranes, and nanotoxicity. His research has contributed to conceptual advances including hydration lubrication, friction of nanostructured surfaces, colloidal interactions in non-polar media, fundamental aspects of nanotoxicity, and non-classical crystallization of ZnO. Such knowledge is also relevant to industrial formulations. Two world-leading products developed from joint research with Snow Business, a Gloucestershire-based SME, have been used in over 1,200 events, including dozens of blockbuster Hollywood films, major festivals, shows and TV programmes. He currently chairs the ISIS User Committee and serves as the Honorary Secretary and Treasurer for the International Association of Colloid and Interface Scientists (IACIS).