Session 6A; Binder Performance and Testing – Keynote speech

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Total Bitumen
Main themes

- Statistics
- Modeling
- Asphalt prediction
- Specs/bitumen quality
- Field validation

Performance
- Aging (16 papers!)
- Moisture
- Fatigue
- Rutting
- Low temp.

Testing
- Rheology
- Chemometrics

Prediction

Binders
- PmBs
- Additivation
- Emulsions
- Roofing
Innovative binder additivation

- PmBs
  - PmB + Sasobit
  - New crosslinking (oil extract, silicon oxide)
  - Maleic anhydride grafted recycled polyethylene treated by irradiation

- Rheology modifier
  - Replacement for oxidized bitumen blocks
  - Packed bitumen for road applications

- PPA: reduction of bitumen oxidative aging:

![Image](image.jpg)
Innovative binder additivation

- Biomass
  - Biobitumen with vegetable oil
  - Use of lignin
  - Biochars
  - Cashew nut shell oil as antiox

- Nanotechnologies
  - Graphite nanoplates
  - Nanoclays
Bitumen quality

- Composition: Evaluation of waxy bitumen
- Process:
  - Change in bitumen quality during working stages / Storage
- Specifications:
  - Performance specifications
  - R-value, Glover-Rowe param.
  - Characteristic viscosity
  - Rheology parameter (T(G* = 15kPa)
- Binder and asphalt prop. relation.
New development in bitumen testing - chemometrics

- Laser Induced Breakdown Spectroscopy (LIBS)
- SAR-AD™, SpecRelate(r)
- Infrared spectroscopy, thin-layer chromatography and atomic force microscopy (AFM)
- Isothermal pressurized differential scanning calorimetry
New development in bitumen testing - chemometrics

- Imaging: visualisation of aging
  - Confocal laser scanning microscopy, atomic force microscopy and transmission electron microscopy
New development in bitumen testing - Rheology

- New pen (air jet)
- Black space to determine the right accelerated aging test
- MSCR:
  - RRT
  - Polymer content determination
- Rotational viscosity
- LAS/LAOS tests
- Test on sand mixtures/mortars
  - Tension-retardation test
Thank you

Meet at the poster session!