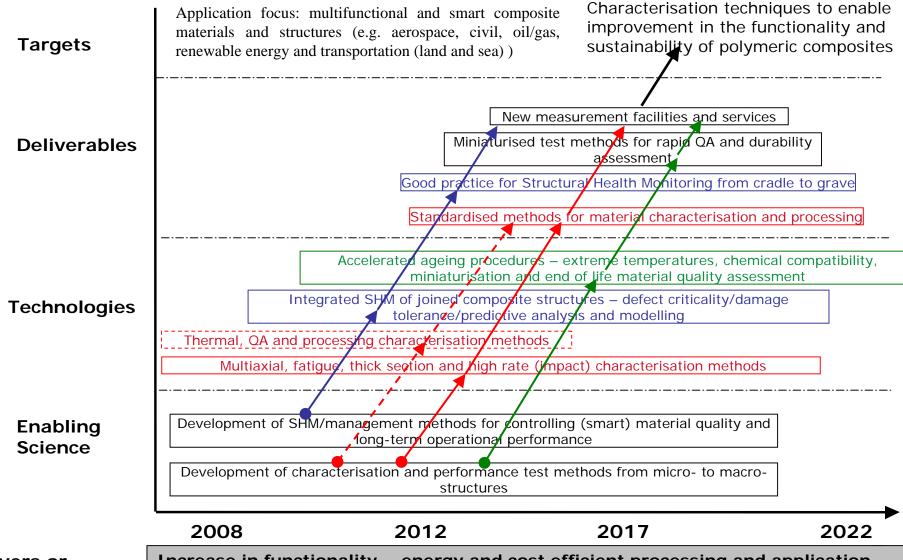
POLYMERS, COMPOSITES AND NANOCOMPOSITES ROADMAPS

2008



Polymeric Composites – Characterisation and Life Time Performance



Drivers or Challenges

Increase in functionality - energy and cost efficient processing and application Improved sustainability - longer and safer life products



Nanocomposites - Nano-scale Characterisation and Life Time Performance

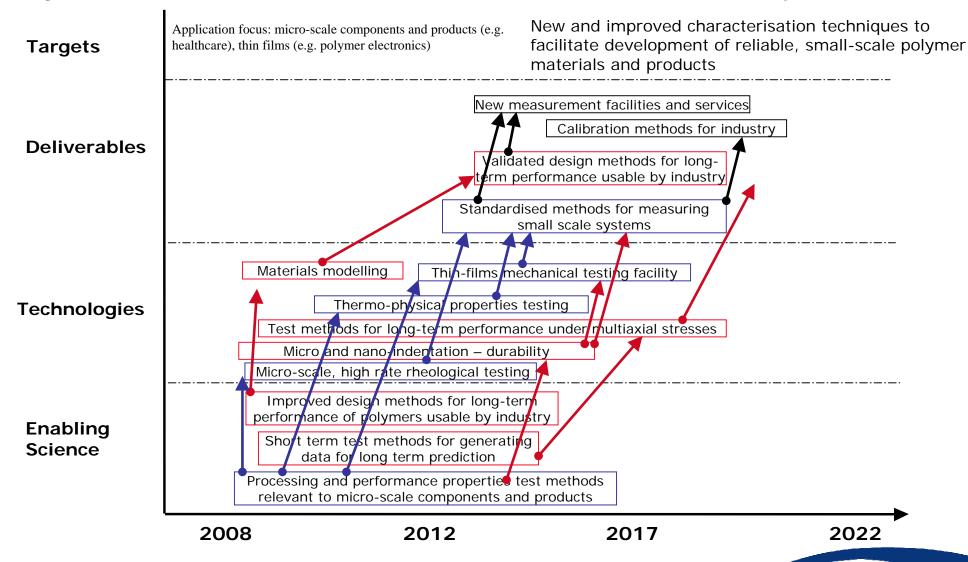
New and improved interfacial and particulate Application focus: novel polymers (e.g. healthcare, characterisation techniques to facilitate electronics), thin films (e.g. polymer electronics), nanocomposite product development **Targets** composites (e.g. aerospace, automotive, electronic, fuel cells,), rubbers (e.g. automotive) New measurement facilities and services Miniaturised test methods for rapid QA and durability assessment Deliverables Predictive models/design procedures for nanoled polymers Standardised methods for naposcale/interfacial nd nanoparticle characterisation Nanoparticle sensors—integrated Im-situ) SHM measurement - self-healing Micro and nano-indentation durability (reversibility/irreversibility) **Technologies** Particle interactions - polymers/ lastomers/rubbers and chemicals/fillers - modelling Dispersion an shape and size distribution measurements Interfacial property characterisation olymers/elastome rs/rubbers Development of nar scale measurement methods and predictive models for characterising interfacial properties and particulate distribution/content for QA and long-term prediction **Enabling** Science Development of characterisation and performance test methods and sensors for assessing interactions and degradation in micro- and nano-particulate reinforced polymeric systems 2008 2022 2012 2017

Drivers or Challenges

Increase in functionality and energy efficient processing Improved sustainability – longer life products



Polymeric materials - micro-scale characterisation and life time performance

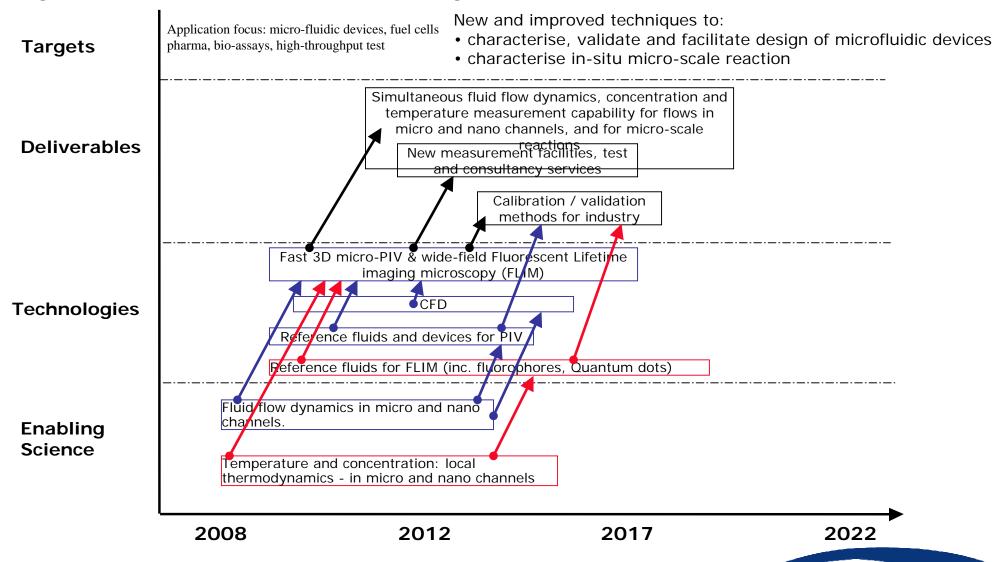


Drivers or Challenges

Improved sustainability – energy and resource efficient products Improved reliability – longer life, safer applications



Polymeric materials – Measurement systems for microfluidics



Drivers or Challenges

Improved design and functionality resulting in improved product/process capability, efficiencies and reliability

