

STIF : IMPACT AND FIRE RESISTANT COMPOSITES BASED ON INORGANIC CEMENTITIOUS MATRIX

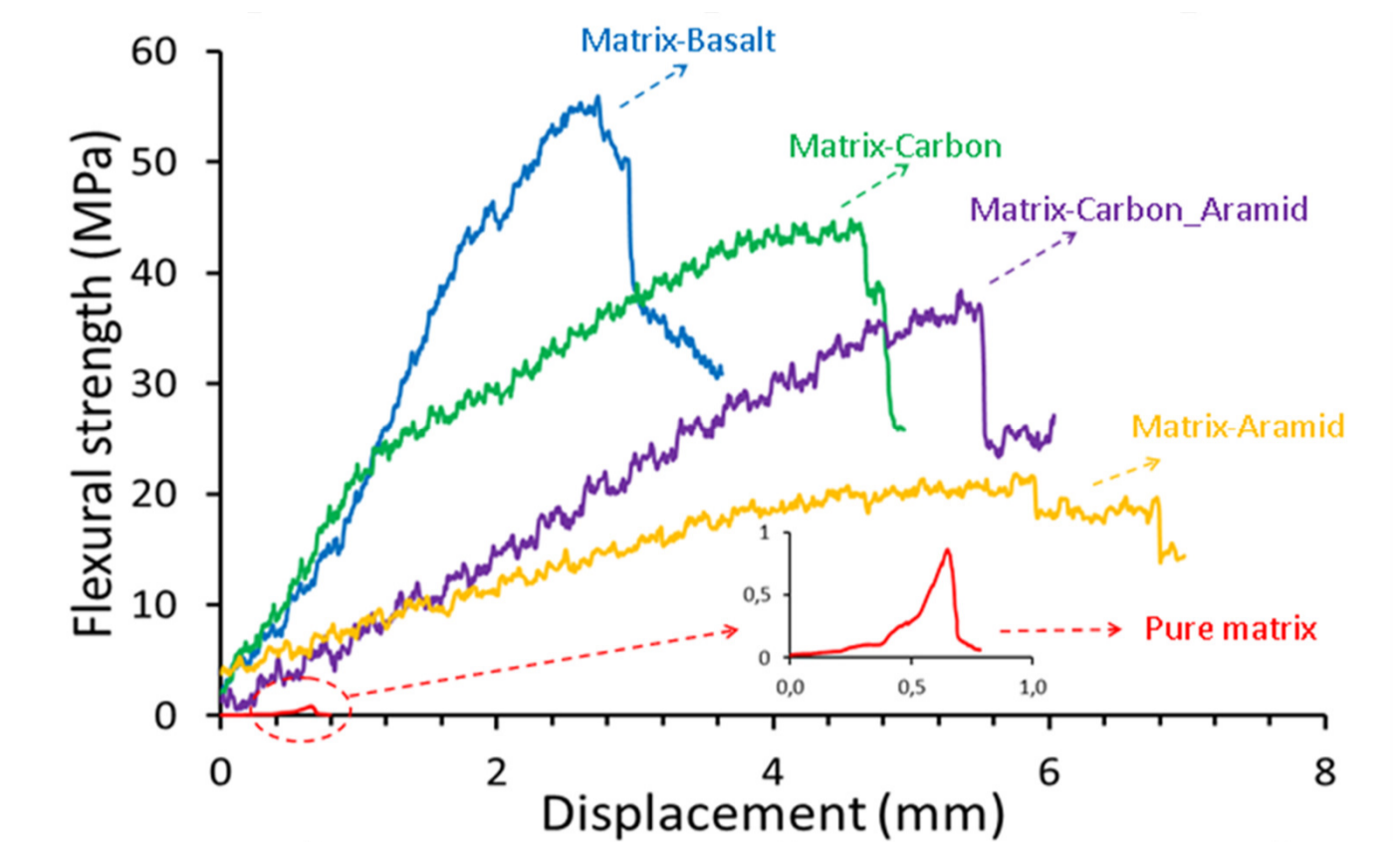
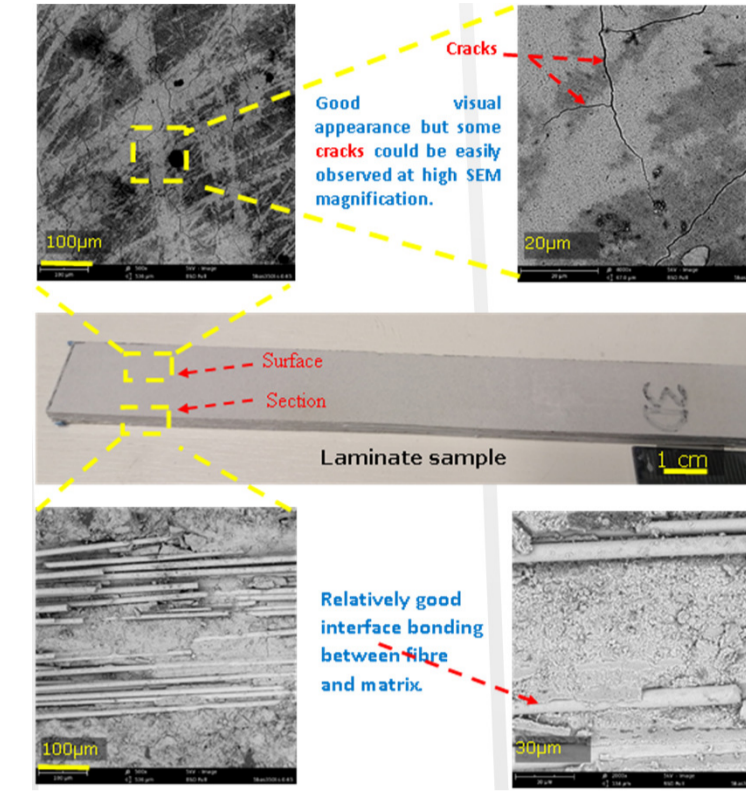
CONSORTIUM:



ACID AND ALKALI ACTIVATED CERAMIC / CEMENTITIOUS HIGH TEMPERATURE COMPOSITES USING INDUSTRIAL RESIDUES

MATERIALS DEVELOPED & PROPERTIES

GGBFS/Fiber: 300°C;
GGBFS/MK/Fiber: 500°C;
Koranel/Fiber basalt: 700°C;
MK and MKCh/ Fiber Alumina: 1000°C;
Acid matrix/ Al Fiber- 1000-1100°C



Tech., natural, recycled fibers: Glass, Basalt, Aramid, Pitch Carbon, Carbon, Alumina, Jute, recyc C-felt

MEASUREMENT PROPERTIES

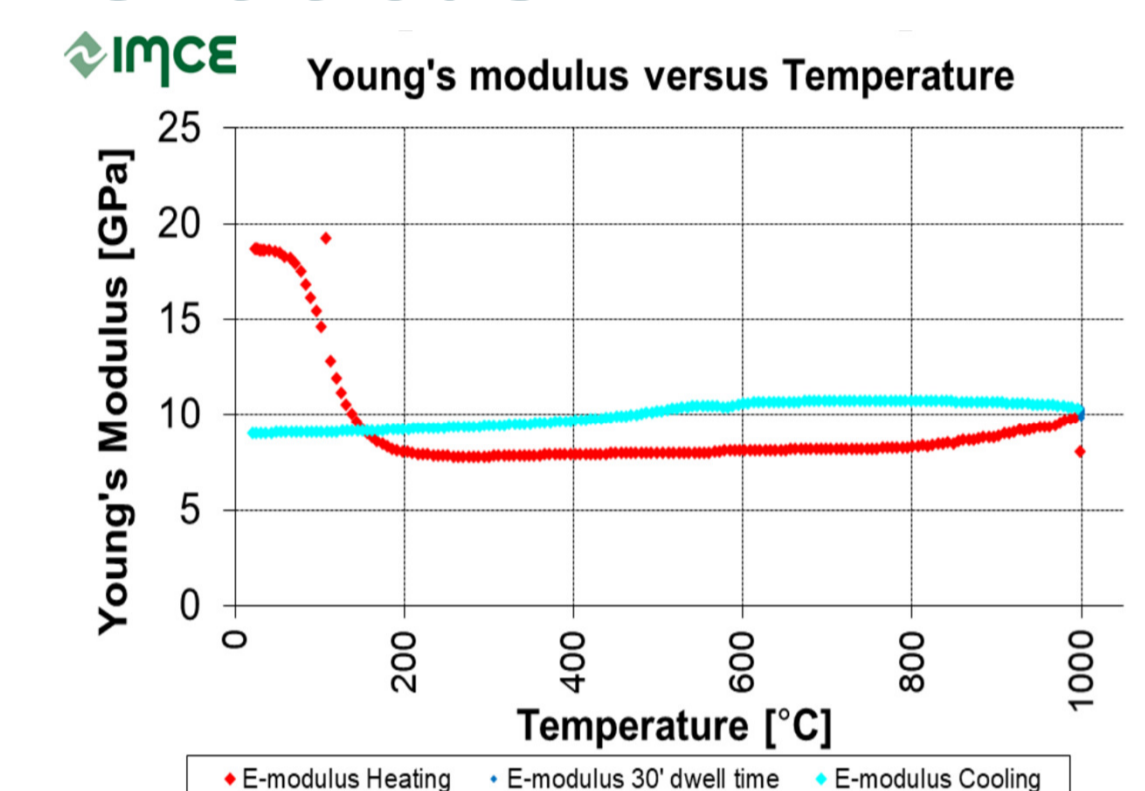
CLIMATE CHAMBER : Automatically measured Orthotropic Engineering constants of cementitious matrix composites at High Temperature (RT) uptill 1000°C

INDUSTRIALISATION: PREPREGS PROCESSING

CURING CYCLES AS LOW AS 80 °C

SHELF LIFE OF PREPREGS AT LEAST TWO MONTHS IN FREEZER (-18°C)

PROCESSING : PRESSING PREPREG COMPOUNDS , OVEN CURE VACUUM FORMING ... LAY-UP



DEMO'S BEING DEVELOPED

DRYING PLATE ,plate production & complex cementitious matrix composite machining

COMPOSITE SANDWICH PLATES FOR BATTERY ,thermal runaway protection

anisotropic thermal properties in plane and z with cementitious foam core ,

SUBSCALE COVER Vega 3D forming

AUTOMATED PROCESSING : sheet pressing, prepregging



APPLICATIONS & ECONOMICS

CONSTRUCTION MATERIALS flax , jute , basalt , milled glass and carbon fibre , felt

ADVANCED COMPOSITES high end applications , alumina fibers , Hiltex /Heat shields

pure silica fibers, astroquartz /Hypersonic radomes

ECONOMIC ALTERNATIVE EQUALLY PERFORMANT

for existing ceramic composite solutions , low energy processing

for High temperature organic resins upto 4-10 times cheaper , >>CTE

USE OF INDUSTRIAL RESIDUES

copperslag , Ground-Granulated -Blast Furnace Slag (GGBFS),

milled windmill blades, Koranel

2023 => BEYOND

Improving maturity and robustness of matrix precursor supply chain of industrial residues

standardization , interchangeability of suppliers

Further development of characterization technology of these materials at extreme conditions

impact ,blast, fire

Further development and research in matrix and fiber-matrix interface

Partners ...for demonstrators development in EUROSTAR CALL 2023/24

ICON 2023 for Flanders

