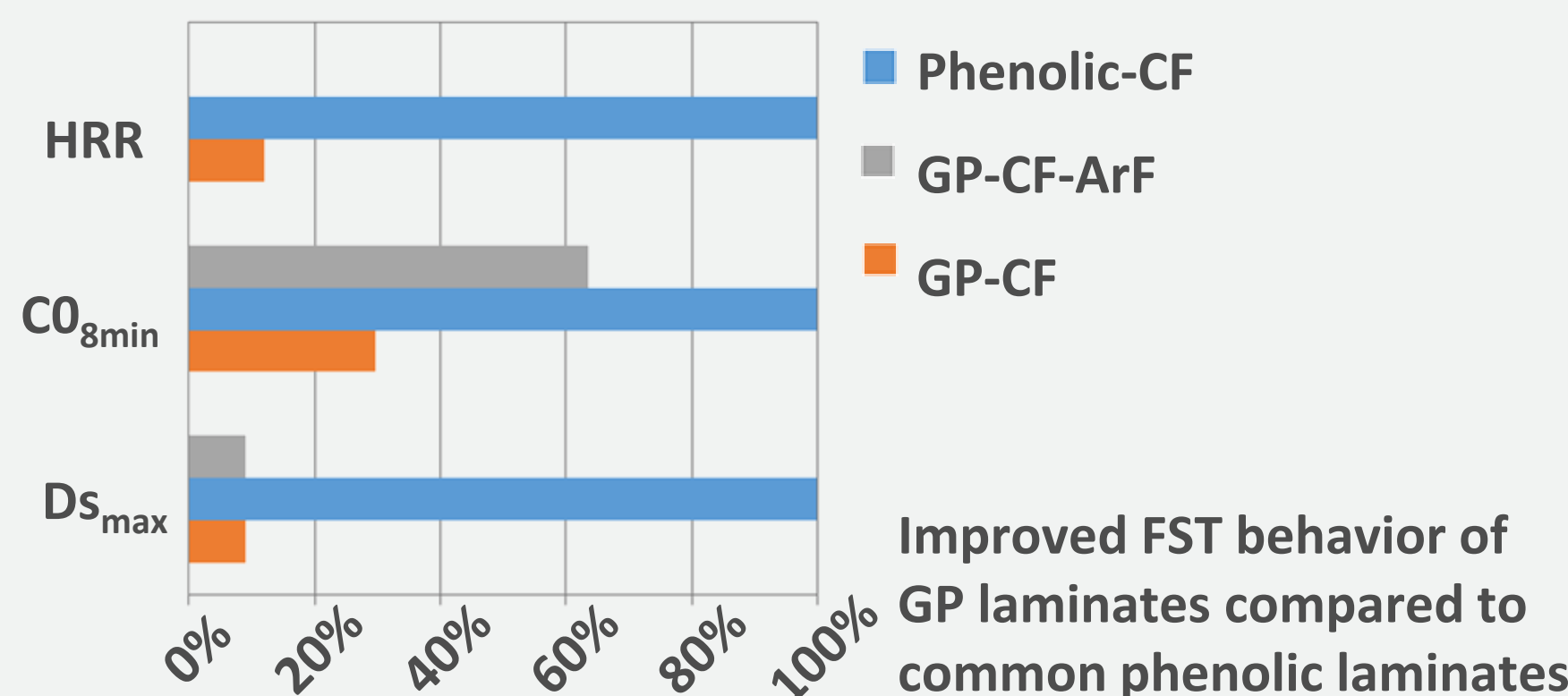
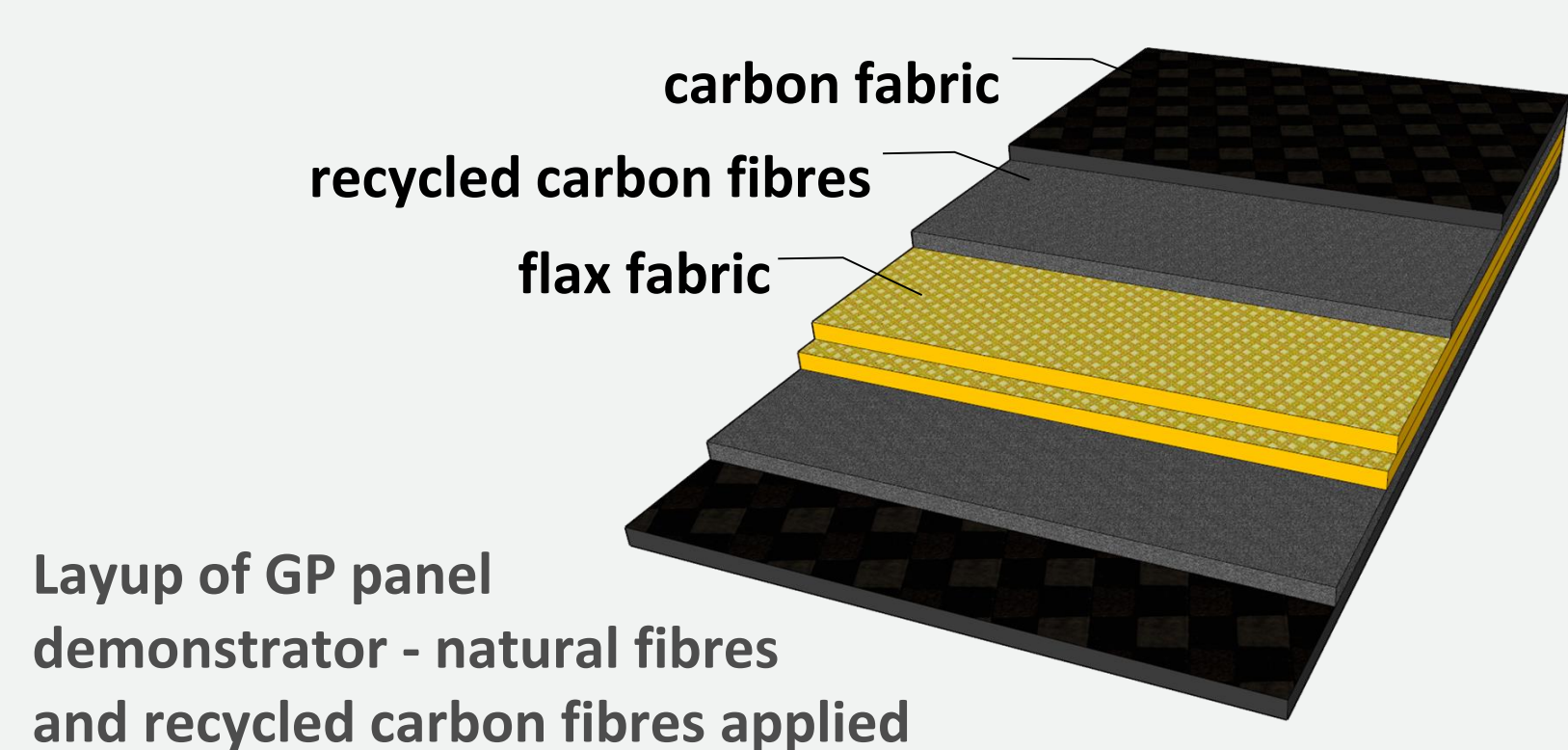
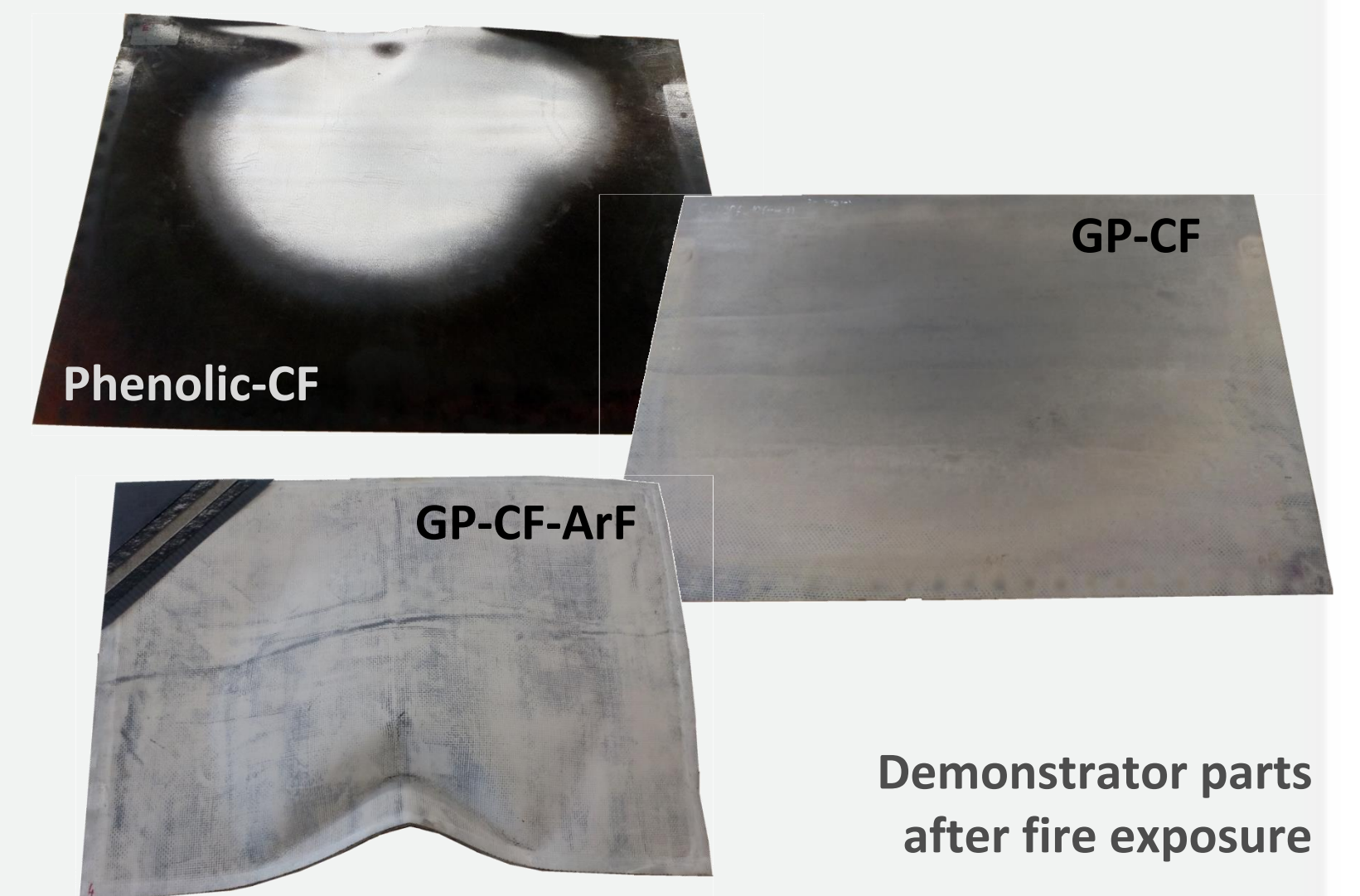


Improved material solutions to mitigate fire, smokes and fumes

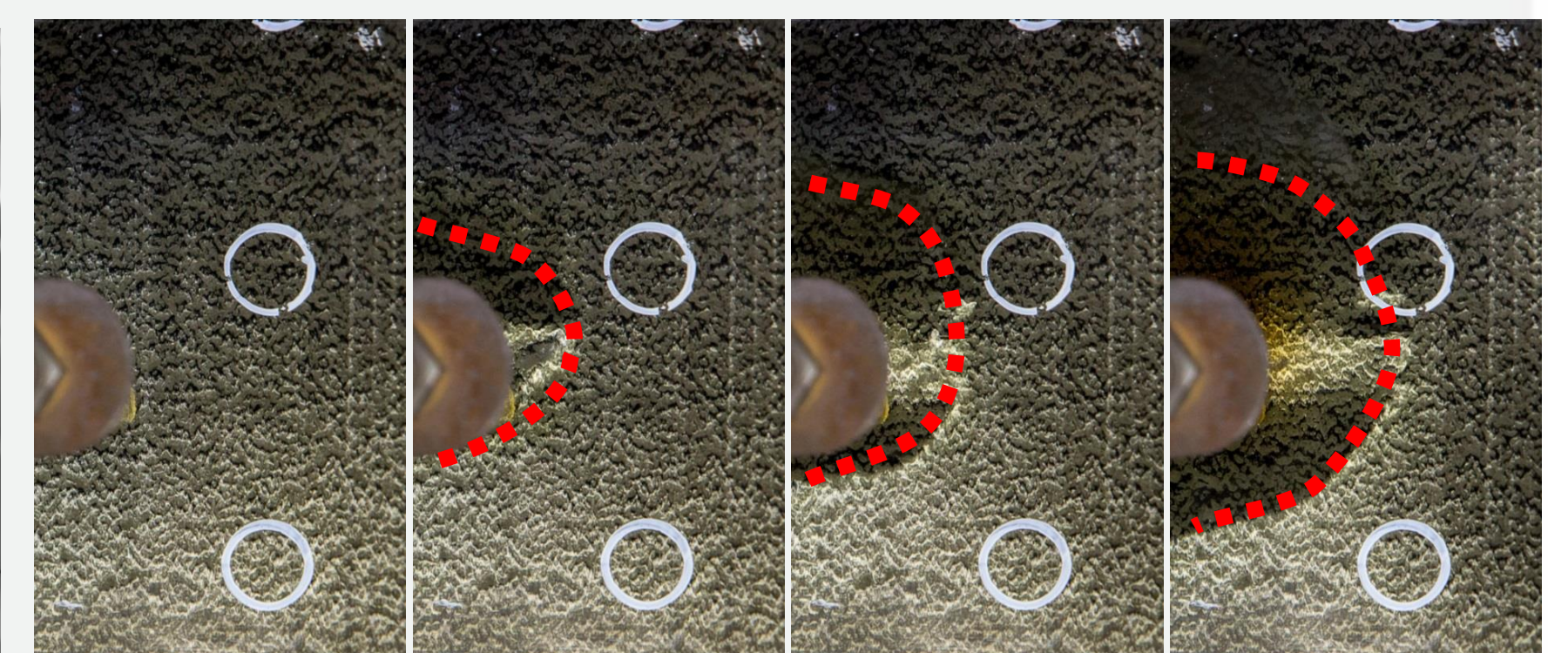
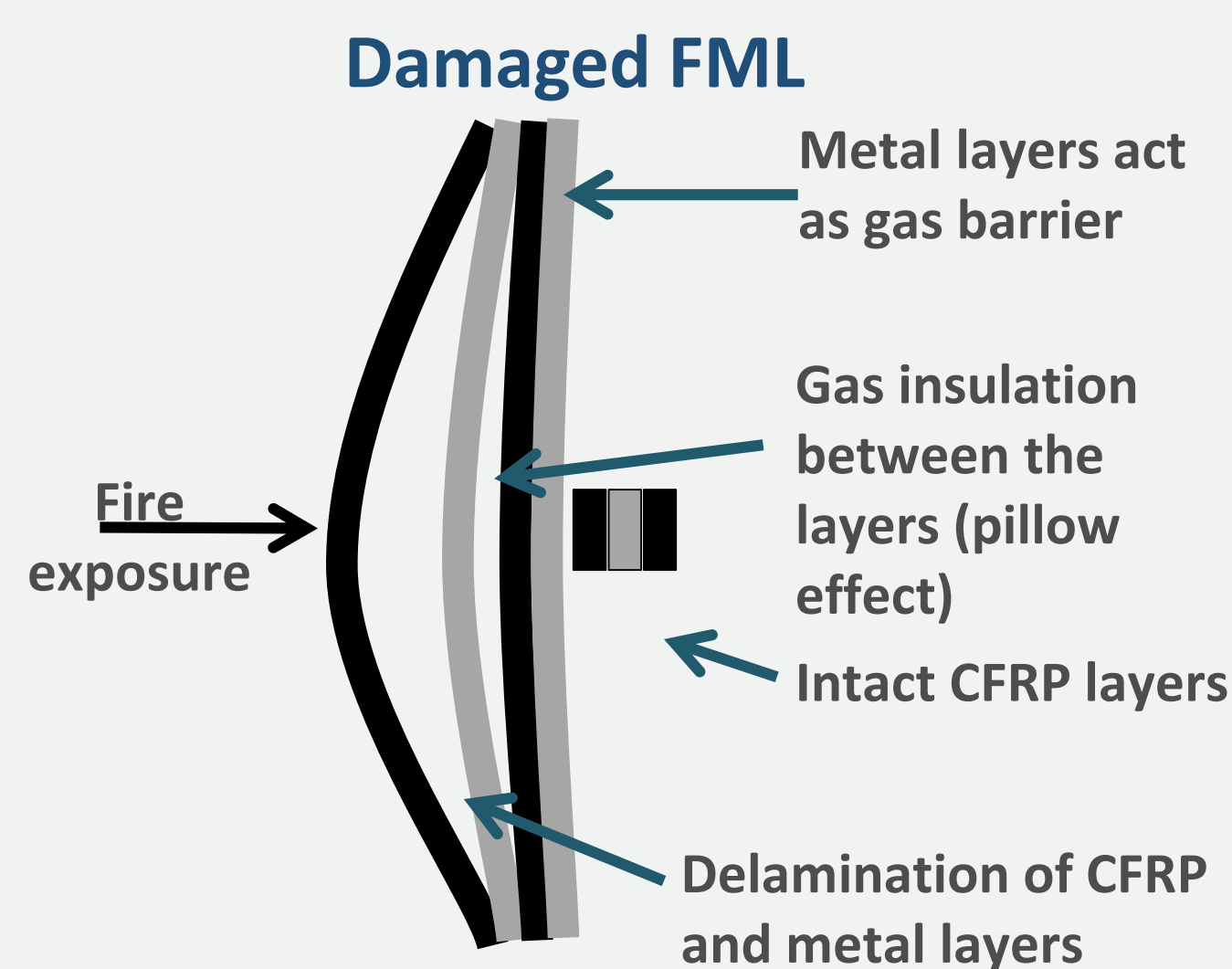
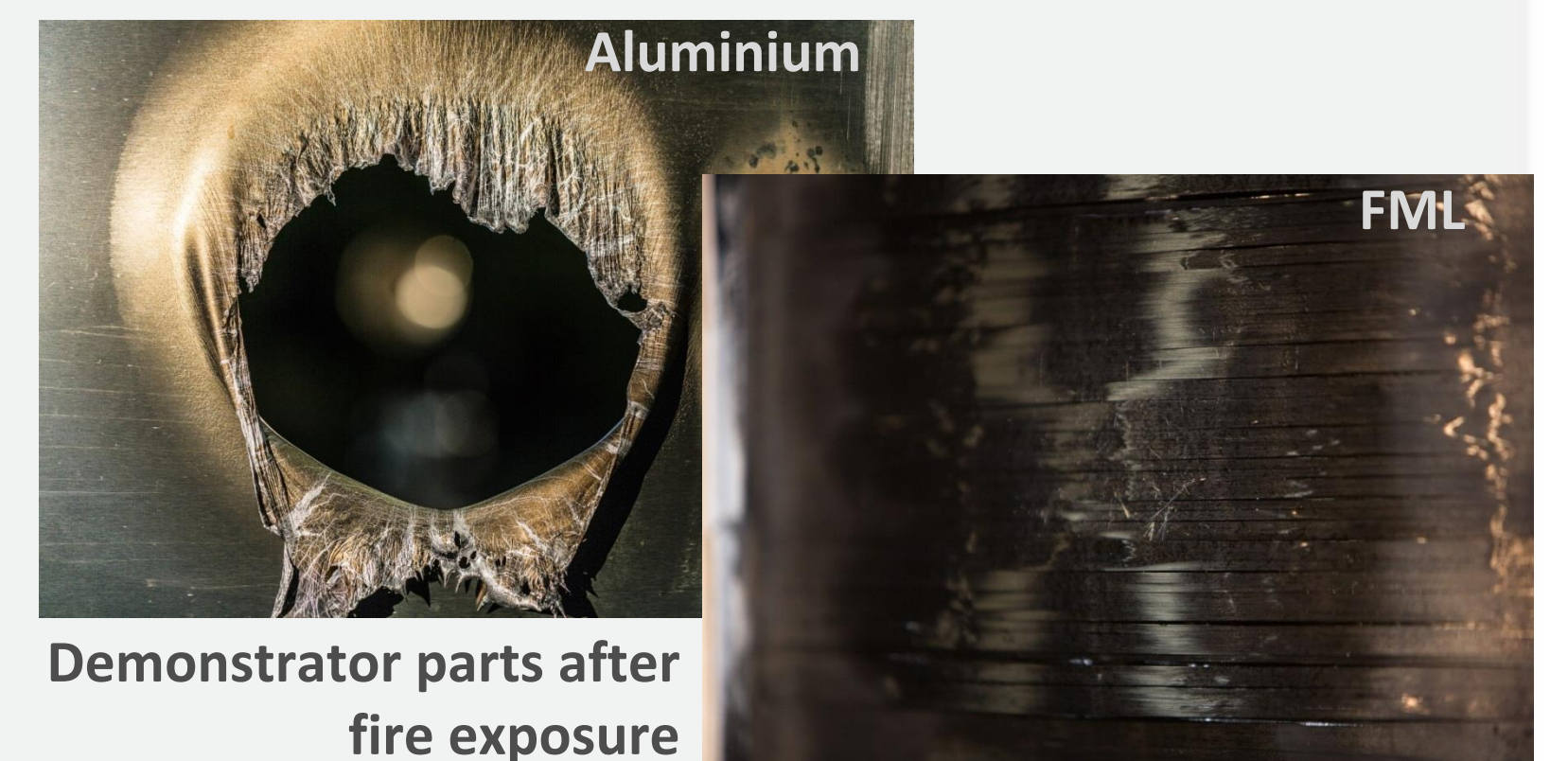
Geopolymers (GP) – inorganic aluminosilicate polymers

- Low temperature processing
- Very high temperature stability
- Significantly improved FST behavior
- Very good residual integrity of GP fibre composites after fire exposure
- Investigated GP composite systems:
 - Monolithic & sandwich structures incl. GP-foam
 - Carbon fibre reinforcements, recycled carbon fibres (rCF)
 - Natural fibre reinforcements (flax fibres)
 - Hybrid GP/phenol composite systems



Fibre Metal laminates (FML) – CFRP laminates reinforced by metal layers

- Steel layers do not melt and act as gas barrier
- Trapped decomposition act as thermal insulation (pillow effect)
- Significantly improved FST behavior
- Prolonged mechanical performance within a fire scenario, generated by intact back side layers



FML test in the CuFEx facility

Modelling - Numerical models of flame penetration and of FML thermal behavior have been validated through tests performed to characterize the material and validate the design.