

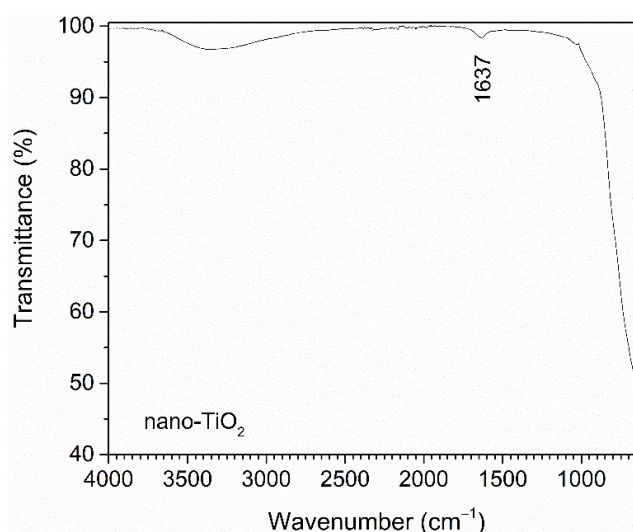
Supplementary info:

Surface hardness and flammability of Na_2SiO_3 and nano- TiO_2 reinforced wood composites

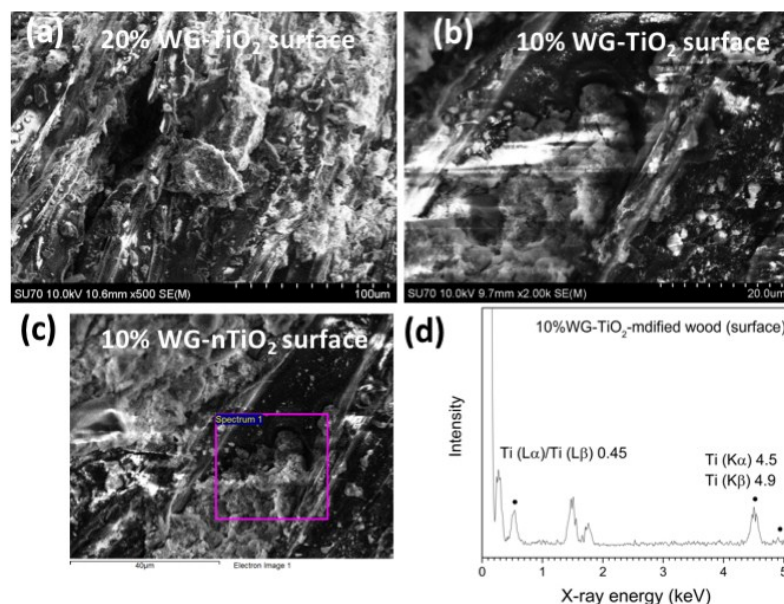
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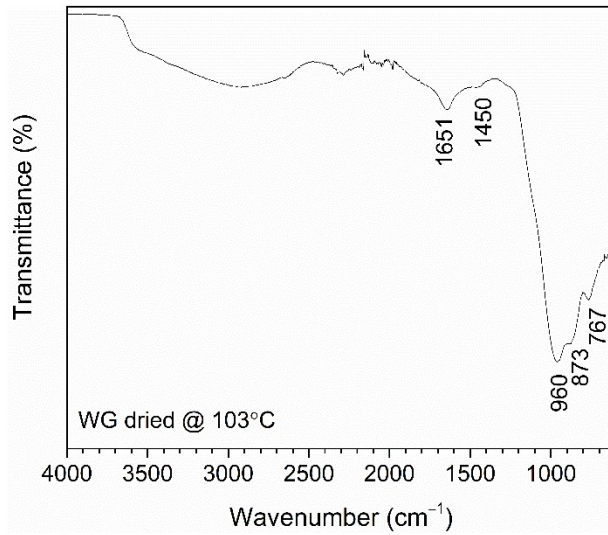
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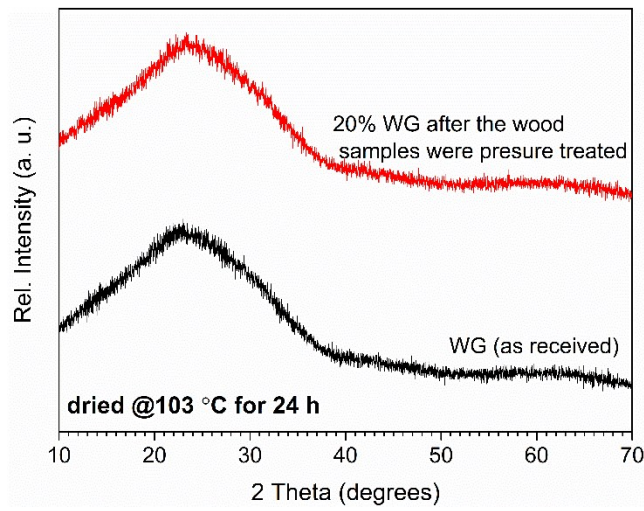
SI. Fig. 1. FT-IR spectrum of TiO_2 nano-powders.



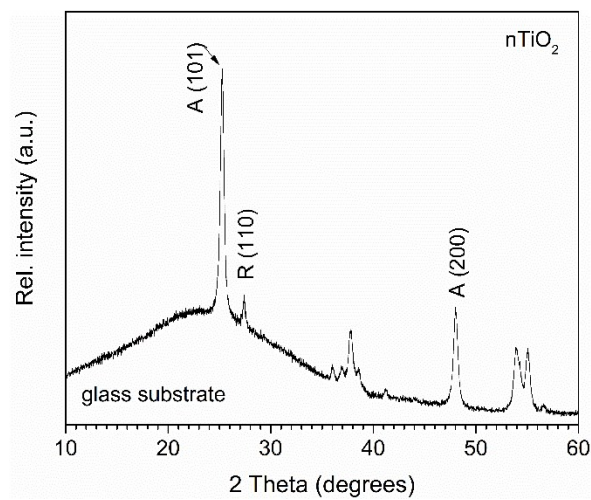
SI. Fig. 2. FE-SEM images of the surface of (a) 20% and (b) 10%-WG- TiO_2 -modified Scots pine sapwood; (c) EDS analysed area and (d) EDS spectrum of the surface of 10%-WG- TiO_2 -modified wood (marked characteristic peaks of $\text{Ti } L\alpha$ (0.452 keV), $\text{Ti } L\beta$ (0.458 keV), $\text{Ti } K\alpha$ (4.52 keV), $\text{Ti } K\beta$ (4.93 keV)).



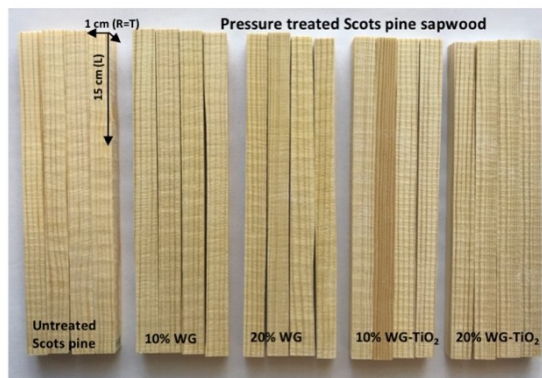
SI. Fig. 3. FTIR spectrum of Na-O-Si gel dried for 24 h at 103°C.



SI. Fig. 4. XRD of dried water-glass (WG) powders at 103 °C for 24 h.



SI. Fig. 5. XRD pattern of TiO₂ nano-powders.



SI. Fig. 6. Untreated and pressure treated specimens of Scots pine sapwood used for the LOI test (dimensions of specimens followed according to user's guide for the LOI (11309-850-3) to BS 2782: Part 1: Method 141 and ISO 4589 (form of the specimens II (form of materials that are self-supporting))).

SI. Video: Flammability test of wood reinforced with aqueous 20% sodium silicate solution. The video can be found online at the following DOI: [10.1039/C9RA05200C](https://doi.org/10.1039/C9RA05200C)