

## Supplementary Material

### **Bark charcoal reflectance may have the potential to estimate the heat delivered to tree boles by wildfires**

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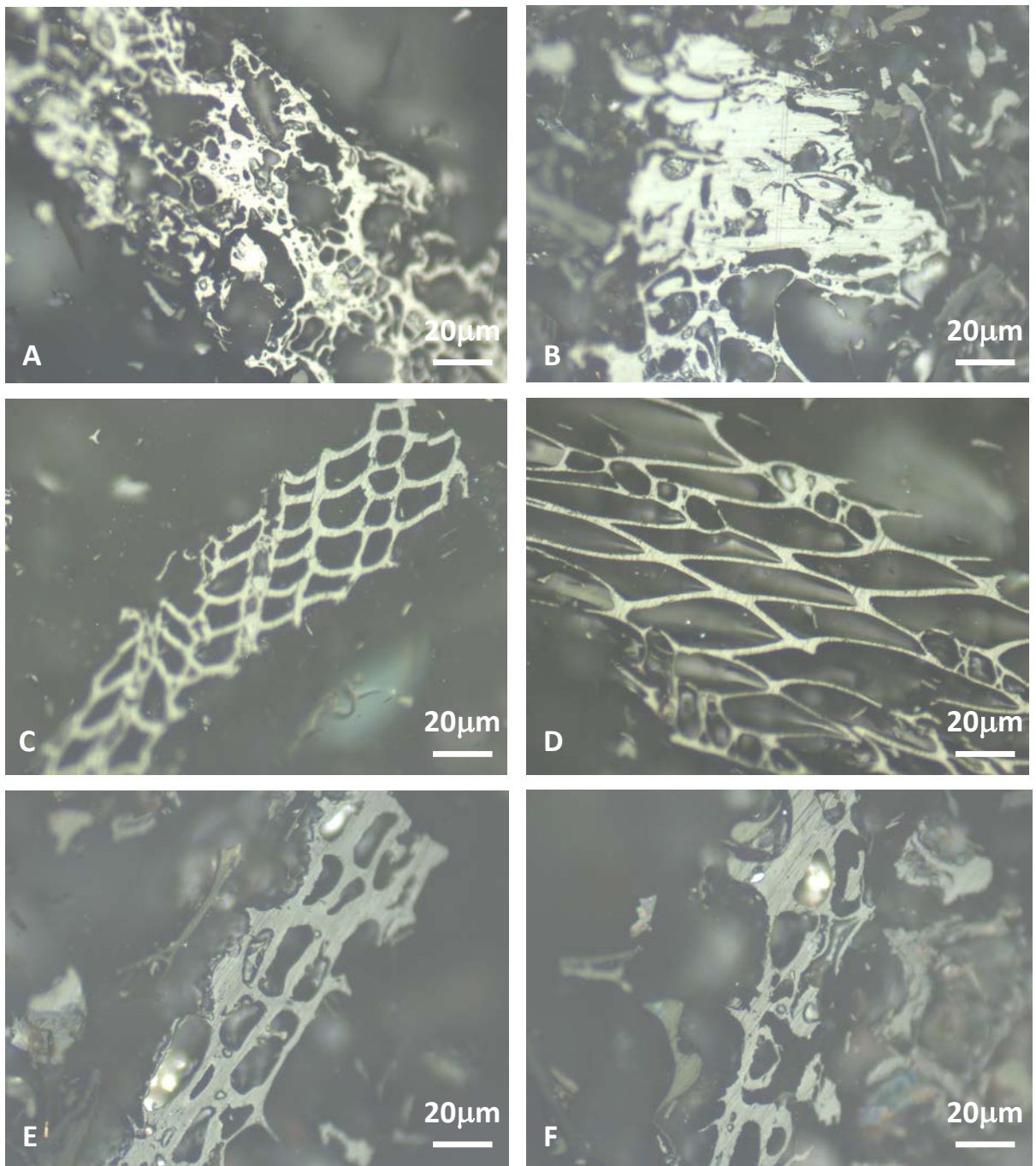
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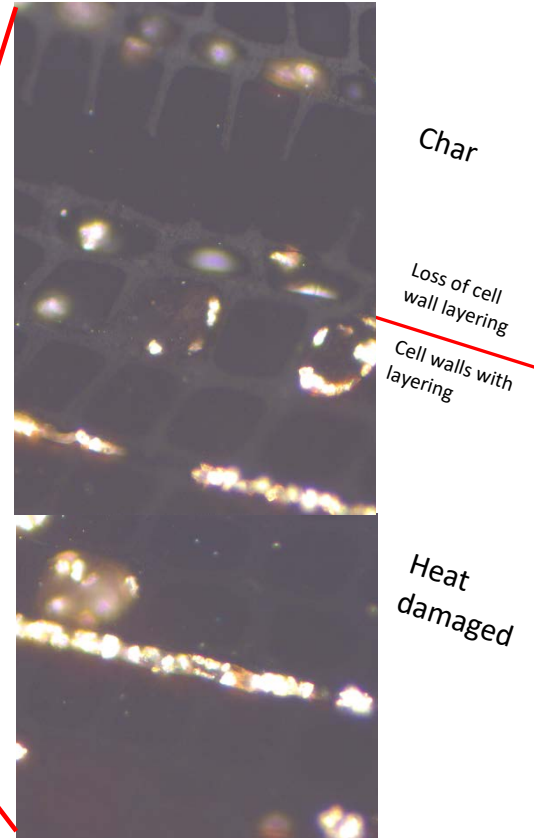
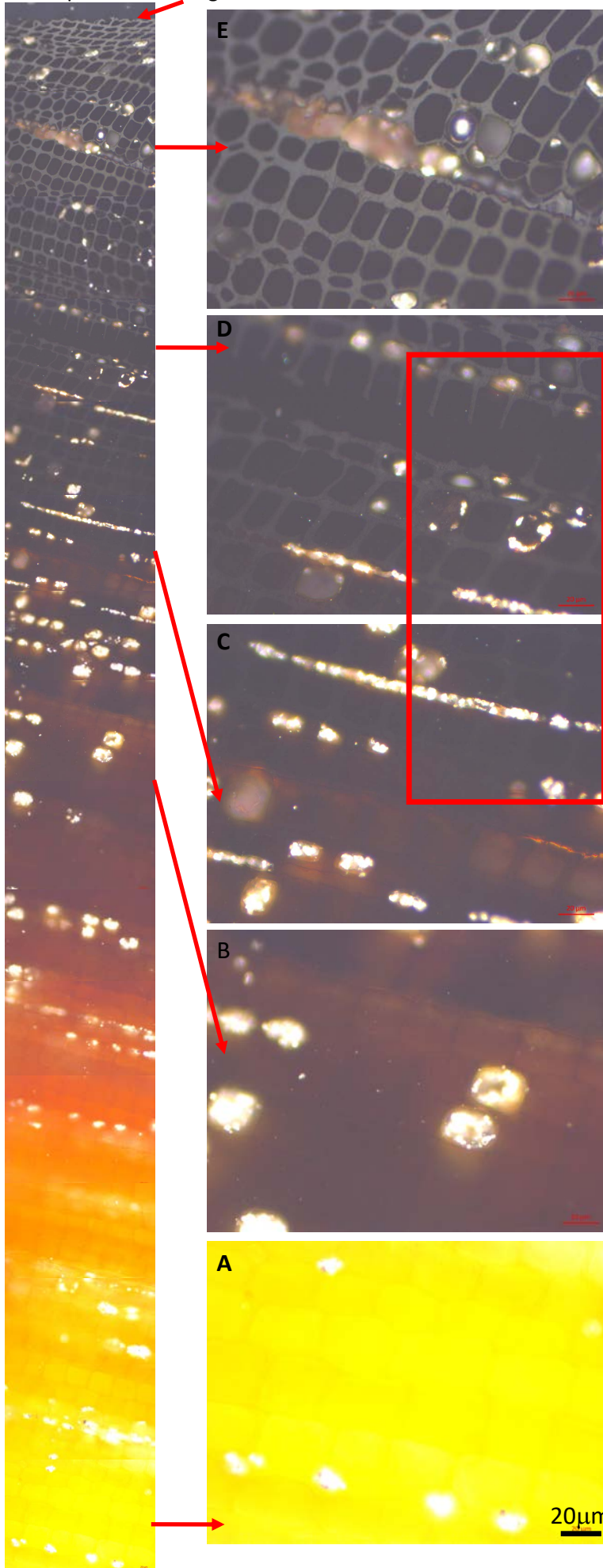
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**Figure S1** Examples of typical particles of charred Pinus bark for which reflectance values were measured taken using an AxioCam 105 color 5-megapixel eyepiece camera attached to the reflectance microscope, and Zeiss Zen software. (A) and (B) are from subsite 9, (C) and (D) from subsite 3 and (E) and (F) from subsite 4. The particles show the various shades of grey observed by eye and the retained cellular structure of the wood. The reflectance measurements are taken using using a Zeiss Axio-Scope A1 optical microscope, fitted with a TIDAS-MSP 200 microspectrometer. Samples were studied using a  $\times 50$  objective (with  $\times 32$  eyepiece magnification), and reflectance measurements were obtained manually using MSP200 v 3.47 software. The system was calibrated with three synthetic reflectance standards, where reflectance is denoted as  $R_0$ ) Strontium Titanite (5.41%  $R_0$ ), Gadolinium Gallium Garnet (GGG) (1.719%  $R_0$ ) and spinel (0.42%  $R_0$ ). Manual reflectance measurements were taken at cell wall junctions across the polished surface of the charcoal.

Surface exposed to heating

Full depth profile through pine wood



**Figure S2** Example depth cross section through a heated pine sample. Full profile to the left from surface exposed to heating through to virgin wood at the base. The transition from (A) virgin wood (B) to heat altered wood, showing darkening of colour (C), the loss of cell wall layering and the transition from brown to dark grey (charred) cell walls is shown. As well as (D) charred wood, showing dark grey reflectance and (E) Light grey colour showing increased charring and greater reflectance of light. The sample of pine was heated in an iCone calorimeter at  $40\text{kWm}^{-2}$  for 80s. Images taken using an AxioCam 105 color 5-megapixel eyepiece camera attached to the reflectance microscope, and Zeiss Zen software.