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## Supplementary Material

# Effect of tree wood density on energy release and charcoal reflectance under constant heat exposure

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## Supplementary Material

Residuals were analysed to check for violations of model assumptions (Altman & Krzywinski 2016). Plotting the residuals against either density or predicted median $R_o$ (Figure S1) does not indicate any systematic relationship, supporting the assumption of linearity and homoscedasticity apparent in the scatterplot (Figure 3). The absolute values of the residuals become slightly lower as density or reflectance increases, but this is not significant (median $R_o$: $r$ = -0.18, $p$ = 0.38; density: $r$ = -0.12, $p$ = 0.58).

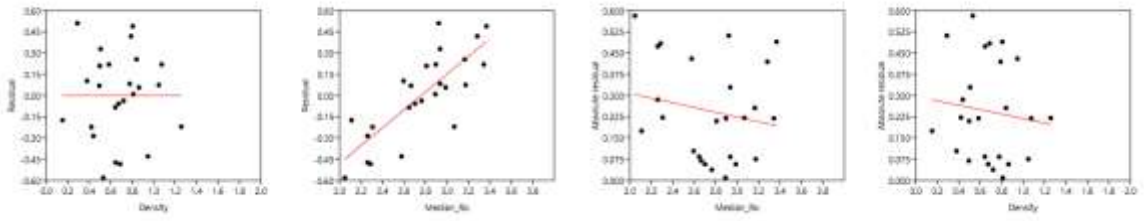

**Figure S1.** Relationships of residuals to density and median $R_O$.

Normality of the residuals is assessed using a normal probability (Q-Q) plot (Figure S2). Approximate linearity of the sample values and the normal order statistic medians ($r$ = 0.99) indicates the approximate normality of the residuals (Fox 2008, Altman & Krzywinski 2016).

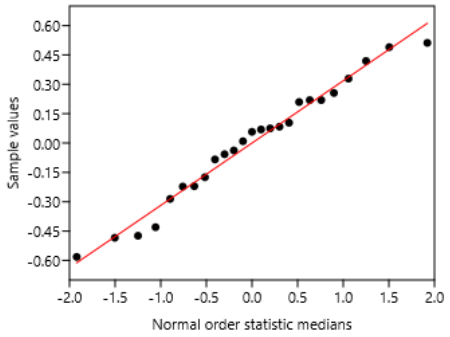


**Figure S2.** Normal probability plot, indicating approximate normality of the residuals.

Nonindependence of the residuals is a potential problem in the absence of randomised sampling (Cohen et al. 2003), so we assessed correlations of the residuals with other variables that might affect the density-reflectance relationship, including climatic region, origin of our specimens (sampled in the field, obtained commercially, or from existing reference material), and broad taxonomic affinity (i.e. conifer or angiosperm). The distribution of residuals across these categories (Figure S3) do not indicate any relationships, though the relatively small number of species could obscure any such effect.

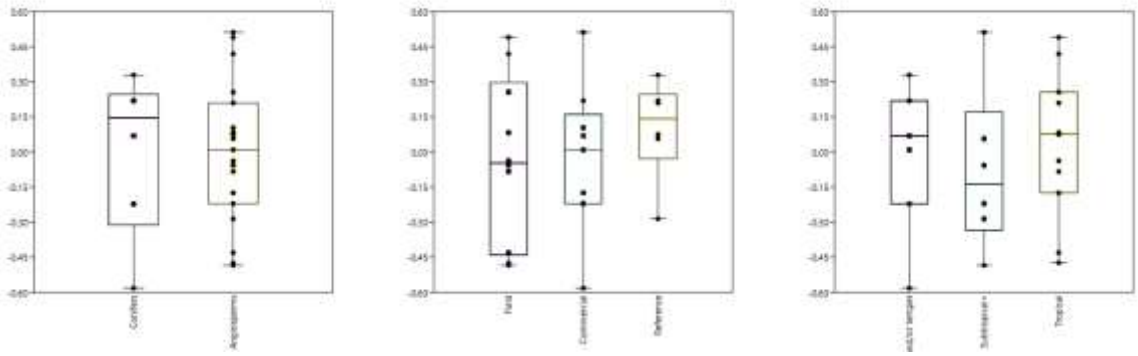

**Figure S3.** Distributions of residuals across different categories of variables that may affect the density-reflectance relationship: conifers/angiosperms (left), origin of specimens (middle), and climatic region (right).

The size of the subsamples is another potentially relevant variable; Jones et al. (1991) noted that size may affect reflectance, as heating proceeds from the outside (though the very small size of our specimens makes this unlikely). Plotting the residuals against the average masses of the pairs of subsamples reveals no obvious relationship (Figure S4); the linear correlation is weak and not significant ($r = 0.19$; $p = 0.36$).

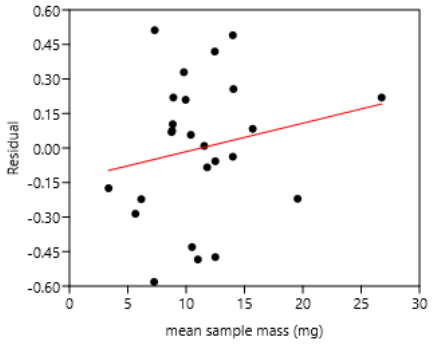


**Figure S4.** Scatterplot of residuals and mean sample mass, indicating no relationship.