

## Article

# Effect of Biomass-Burning Emissions on Soil Water Repellency: A Pilot Laboratory Study

Vera Samburova <sup>1,2,\*</sup>, Rose M. Shillito <sup>3,4</sup>, Markus Berli <sup>3,\*</sup>, Andrey Y. Khlystov <sup>1</sup> and Hans Moosmüller <sup>1</sup>

<sup>1</sup> Division of Atmospheric Sciences, Desert Research Institute, Reno, NV 89512, USA; Andrey.Khlystov@dri.edu (A.Y.K.); Hans.Moosmuller@dri.edu (H.M.)

<sup>2</sup> Department of Physics, University of Nevada-Reno, Reno, NV 89557, USA;

<sup>3</sup> Division of Hydrologic Sciences, Desert Research Institute, Las Vegas, NV 89119, USA; Markus.Berli@dri.edu (M.B.)

<sup>4</sup> Coastal Hydrology Laboratory, US Army Engineer Research and Development Center, Vicksburg, MS 39180, USA; Rose.M.Shillito@erd.c.dren.mil (R.M.S.)

\* Correspondence: vera.samburova@dri.edu (V.S.); markus.berli@dri.edu (M.B.)

In his Theory of Infiltration, J.R. Philip [1] introduced the following equation for cumulative infiltration,  $I$ :

$$I = St^{1/2} + At \quad (1)$$

where  $S$  ( $l/t^{1/2}$ ) is sorptivity, defined as the ability of a soil to absorb water by capillarity, the parameter  $A$  ( $l/t$ ), related to the hydraulic conductivity of the soil [2], and  $t$  the infiltration time. The early stage of infiltration is governed by capillarity and equation (1) can therefore be simplified to:

$$I = St^{1/2} \quad (2)$$

Shillito et al., [3] showed how sorptivity is related soil water repellency, expressed in terms of the effective contact angle of the soil, and by means of Philip equations (1) and (2) how soil water repellency affects infiltration.

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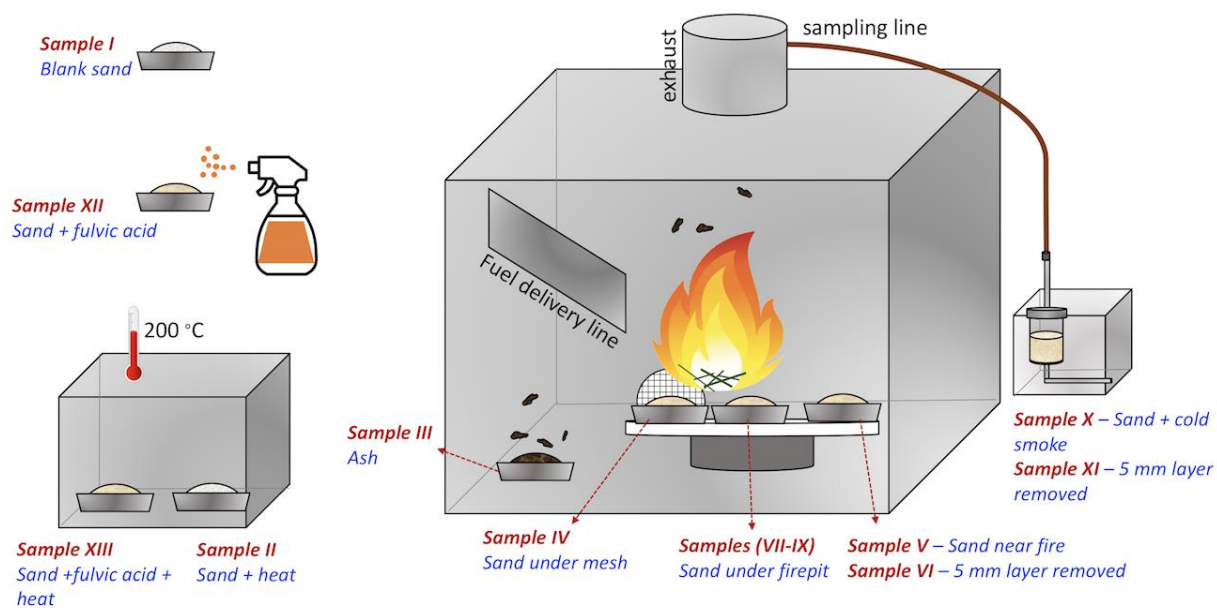
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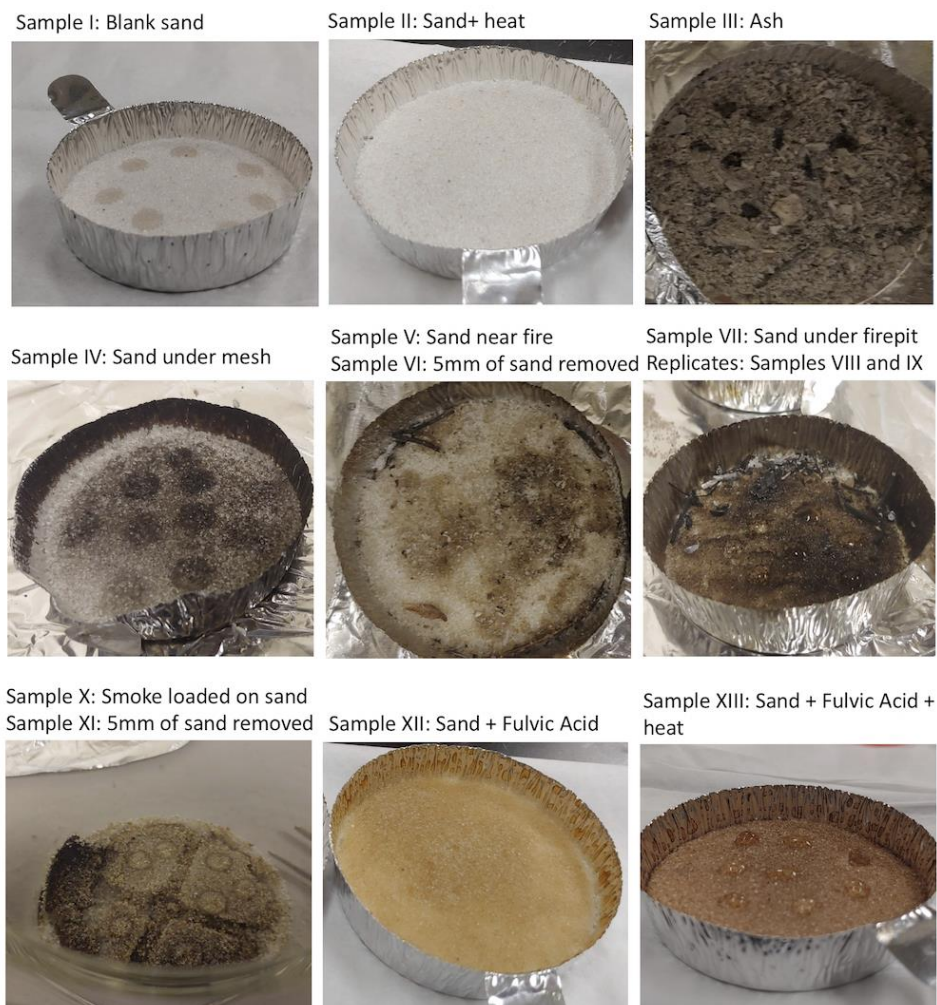
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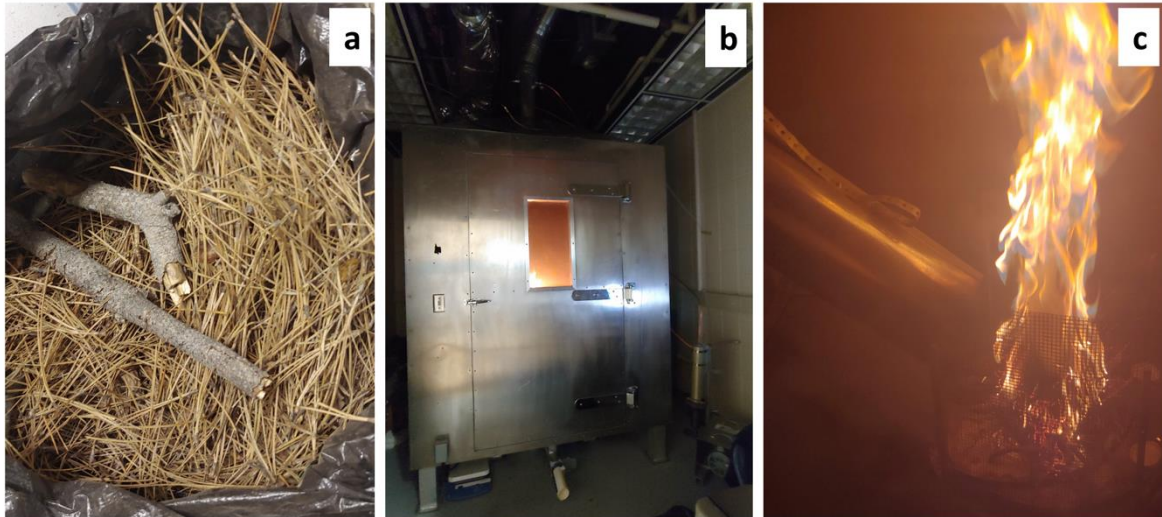
**Figure S1.** DRI combustion chamber with (a) fuel-delivery system and (b) burning platform (round ceramic disc on the bottom right).



**Figure S2.** Schema of the combustion experiment.



**Figure S3.** Pictures of the tested samples.



**Figure S4.** (a) Jeffrey pine duff, (b) DRI combustion chamber in use, (c) combustion in progress (tube on the left is part of the fuel-delivery system).

## References

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