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Soil Surface Structure: A key factor for the degree of soil water repellency

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Despite of considerable efforts, the degree of water repellency has not always been fully explained by chemical property of soil (termed hydrophobicity). That might be because the structure of a soil surface was not considered properly, which is another main factor determining the severity of soil water repellency. Surface structure has only recently been considered in soil science, whilst it has been paid attention for several decades in materials science due to its relevance to industrial applications. In this contribution, comparison of critical contact angles measured on different surface structures (made with glass beads, glass shards and beach sands) is presented and the effect of surface structure on manifestation of soil water repellency is discussed in terms of several different variables such as the individual particles shape, and areal and structural factors of the actual surface.