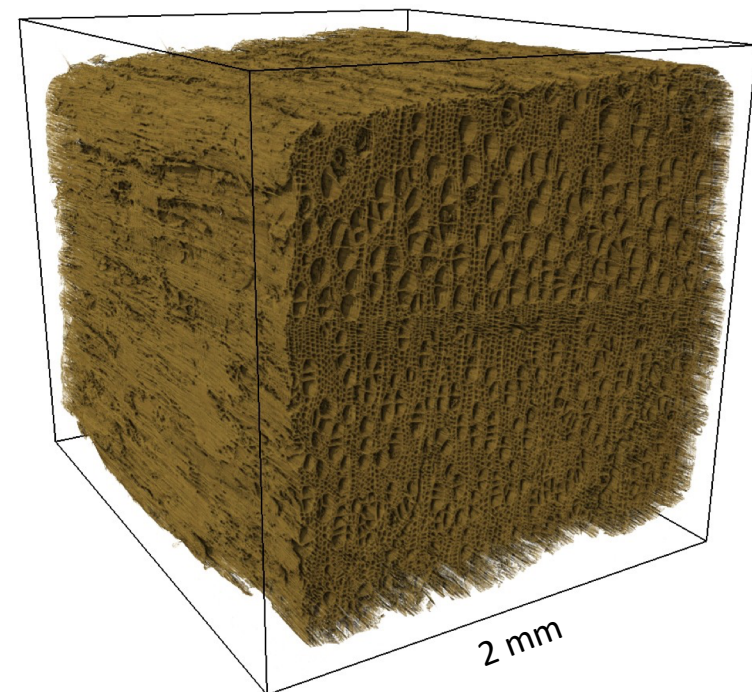
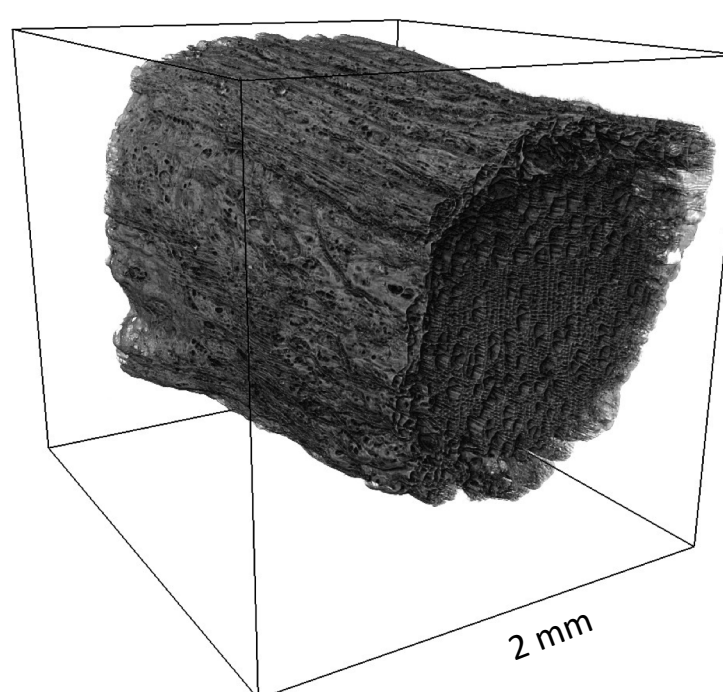


Zoom (c) : Phenomenology

The pyrolysis process, started when scratching the sulfur head, is self sustained thanks to the heat produced by the flame. The heat produced by the flame diffuses inside the material. From the bottom and going to the surface, the virgin wood is first dried (up to 100°C) and pyrolyzed (up to ~ 600°C). Pyrolysis gases may crack further, recombine and deposit while percolating through the network of pores. As they reach the surface and mix with oxygen, reactive gases burn, producing the flame. Oxygen may also react with the char in the subsurface zone. This is observed on the match where the red color indicates an exothermal oxidation reaction.



Zoom (a) : X-Ray microtomography of virgin match



Zoom (b) : X-Ray microtomography of burnt match