

ABSTRACT OF THE DISCLOSURE

Methods and systems are disclosed for extracting hydrogen and/or liquid fuel from a compound comprising carbon, oxygen, and hydrogen (“C-O-H”). The compound may include cellulose, lignin, and/or hemicellulose, for example. The compound may include a waste stream that includes at least one C-O-H compound. Water may be combined with the C-O-H compound to produce a wet form of the C-O-H compound. The wet form of the C-O-H compound may be transferred into a reaction processing chamber. The wet form of the C-O-H compound may be heated within the reaction chamber such that elements of the C-O-H compound dissociate and react, with one reaction product comprising at least hydrogen gas and/or liquid fuel. Some embodiments may utilize non-oxidation reactions to produce the hydrogen and/or liquid fuel, such as hydrous pyrolysis reactions. The hydrogen gas and/or liquid fuel may be utilized to generate electrical power, heat, or power different types of engines.

Fig. 1B for publication