A research on biochar via a comprehensive scientometric approach

Yuening Li[1], Shanxue Jiang[2], Ting Wang[1*], Yingchao Lin[1*], Hongjun Mao[1*]

1. Center for Urban Transport Emission Research, State Environmental Protection Key Laboratory of Urban Ambient Air Particulate Matter Pollution Prevention and Control, College of Environmental Science and Engineering, Nankai University, Tianjin 300071, China

2. Barrer Centre, Department of Chemical Engineering, Imperial College London, London SW7 2AZ, United Kingdom

* Correspondence to Dr. Ting Wang, Dr. Yingchao Lin, Prof. Hongjun Mao; Telephone numbers: +86-22-23504912; E-mail: wangting@nankai.edu.cn; dei@nankai.edu.cn; hongjunmao@hotmail.com.

1. Keyword analysis

Excluding 3254 articles without keywords information on the ISI Web of Science, 13324 articles were analyzed. According to the author keywords, there were 30120 different keywords. Because of ''biochar*'', "charcoal*" and "bio-char*" being the search terms in this study, biochar(s), charcoal(s) and bio-char(s) should be ignored. Except these words above, "adsorption", "pyrolysis" and "activated charcoal" occupied the top three most frequent keywords.

The result was a little different from that of title analysis, "soil" was the 20th most frequent keywords instead of the second in the title analysis and keywords word cloud (Fig.S1). This difference was caused from the different calculation methods. For example, "soil remediation" contained "soil", but it was regarded as a different word when the occurrence frequency of keywords

was measured by Excel. However, the word cloud calculated every word separately, therefore "soil" in "soil remediation" was also selected and the occurrence frequency added with that of "soil". These two methods have their own benefits, combining two calculation methods could help us better understand the hot research directions. Based on both methods, it could be concluded that research areas such like agriculture, energy, water or soil treatment and materials study were the hot research directions, which was similar with that analyzed in section 3.7.
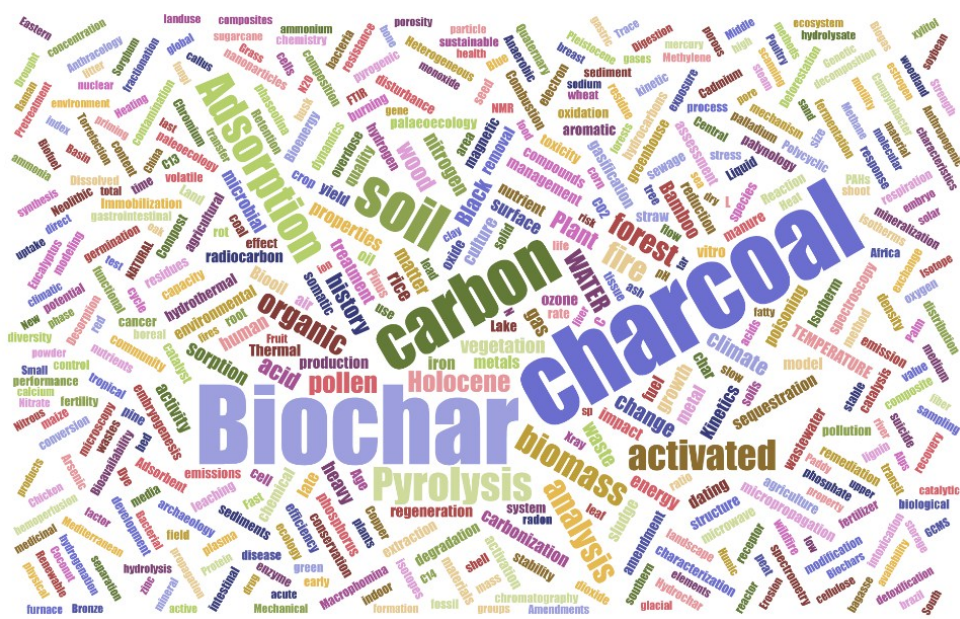

Fig. S1 Word cloud generated from keywords with frequency top 500