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## Pyrolysis of domestic based feedstock up to 300°C and applications of its products

The Global discarding of resources is increasing at an alarming rate. Current technology is available to treat a variety of these resources. However, the majority of waste conversion methods is economically unviable on large scale and has many complications. Pyrolysis is commonly operated at high temperature in order to thermally degrade feedstock into syngas, bio-oil and biochar. High temperature pyrolysis has a high cost and danger aspects to operate at a domestic level. Therefore, low temperature pyrolysis offers a thermal degradation mechanism, whereby it costs less and produces high value products. The chemical characteristics of the bio-oil formed from low temperature pyrolysis are similar to that of diesel and gasoline. Chemical reformation may be needed to ensure the bio-oil properties are appropriate for the intended use. The syngas produced consists of light hydrocarbon chains as well as $CO_2$ and CO. The biochar formed has desirable characteristics for it to be used as a water filter. These characteristics include a wide pore size distribution, high adsorption capacity and no toxic compounds, such as polycyclic aromatic hydrocarbons PAHs, being formed. The entire different product phases formed contains high heating values, enabling them to be used as fuel resources. These products can also be used as chemical feedstock for various chemical processes. Low temperature pyrolysis offers an alternative method to dispose of discarded household materials and recover valuable chemicals. The advantages of such process are low cost and the least environmental impact and a wide range of applications of its products.

### Biography

Hussam Jouhara is an Associate Professor in Brunel University London since obtaining his PhD from Manchester University in 2004. He has unique expertise in working on applied heat exchangers and energy-related research activities with direct support from research councils and various UK and international industrial partners. He has extensive expertise in designing and manufacturing various types of heat exchangers, including heat pipes and heat pipe-based heat exchangers for low, medium and high temperature applications. His work in the field of heat pipe based heat exchangers resulted in novel designs for recouperators, steam generators & condensers and flat heat pipes. These have been implemented across various industries including, but not limited to: food, electronics thermal management and low to high industrial waste heat recovery and Energy from Waste.

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