system that does not produce activated carbon to provide filtering of noxious compounds using activated carbon from the first high-temperature pyrolysis system. A high-temperature pyrolysis system may be combined with one or more low-temperature feedstock conversion processes such that waste heat from the high-temperature pyrolysis system is used to operate the low-temperature process. A non-wetting carbon having pores fused with silica can be produced from using the system and process.

SUMMARY OF THE INVENTION

[0009] A feedstock conversion feed system serves to transport a feedstock through different processing units or stations to a reactor vessel wherein chemical and/or physical reactions occur to produce suitable, useful end products. Various processing units include a size reduction device such as one or more shredders, or one or more pelletizers, or a combination of both. Desirably, the feedstock is often shredded first followed by pelletization thereof. The pelletizing unit operation generally reduces the feedstock and densifies the same. Another processing unit as per embodiments of the present invention include heating and blending devices that can be one or more feeders and/or one or more extruders, or both. Various different types of feeders can be utilized wherein some include a ram, or a chain conveyor, a helical screw, and the like. The one or more extruders can generally be any type of extruder known to the literature and to the art, such as a single screw extruder, or a twin screw extruder that generally is preferred.

[0010] In another embodiment, a conversion feed system transports the feedstock through various stages to a pyrolytic reactor that also produces stable, useful end products as set forth hereinbelow. The various processing units include a homogenizer that generally does not shred, but rather breaks up, separates, or forces apart typically compressed feedstock that is generally subsequently mixed or blended so that the feedstock generally contains similar types of specific plastics, carbonaceous material, or any combination thereof. Such feedstock is then fed to a shredder that further separates the feedstock and then to a pelletizer that desirably forms small briquettes, a cubic mass, etc. of feedstock, that is then heated and fed to an extruder whereby a solid or semi-solid mass therefrom is fed to a pyrolytic reactor.

[0011] According to a first aspect of the present invention, there is provided a plastic conversion feed system for transporting a feedstock to a reactor vessel including: a homogenizer capable of breaking up feedstock including plastic material or hydrocarbonaceous material or any combination thereof; a pelletizer capable of

reducing the size and densifying said homogenized feedstock; and an extruder capable of forming a continuous mass of feedstock that is fed to said reactor vessel.

[0012]According to a second aspect of the present invention, there is provided a process for transporting a feedstock to a reactor vessel using the above plastic conversion feed system, including the steps of: breaking up said feedstock in the homogenizer, said feedstock including a plastic, a hydrocarbonaceous material, or any combination thereof; reducing the size of said feedstock with the pelletizer; operatively connecting said extruder to said reactor with a feed conduit, and extruding said feedstock into said reactor with the extruder via the feed conduit.

[0013] According to a third aspect of the present invention, there is provided a plastic conversion feed system for transporting a feedstock to a reactor vessel, including: a size reduction device capable of reducing the size of and densifying said feedstock including a plastic, or a hydrocarbonaceous material, or any combination thereof; a heating device capable of heating and transferring said reduced sized feedstock to an extruder, said extruder having an output axis; and a feed conduit connecting said extruder to said vessel and capable of feeding said feedstock to said vessel, and said conduit optionally having an output axis of up to about a 5° radius angle with respect to said extruder device output axis.

[0014] According to a fourth aspect of the present invention, there is provided a process for transporting a feedstock to a reactor vessel with the above plastic conversion feed system, including the steps of: reducing the size of said feedstock in the size reduction device, said feedstock including a plastic, or a hydrocarbonaceous material, or any combination thereof; heating and blending said reduced size feedstock; transferring said reduced size feedstock to the feed conduit, wherein said feed conduit is connected to said vessel, and feeding reduced size feedstock to said vessel via the feed conduit.

BRIEF DESCRIPTION OF THE DRAWINGS

[0015] The foregoing and other features of the present invention will become apparent to those skilled in the art to which the present disclosure relates upon reading the following description with reference to the accompanying drawings, in which:

[0016] FIG. 1 is a schematic view of a plastic conversion feed system for feeding hydrocarbonaceous material and/or plastic polymers to a size reduction device such as a shredder and/or pelletizer and subsequently to a heating and blending device such as a feeder and/or an extruder for preparing a suitable feedstock for a vessel wherein chemical and/or physical reactions take place;