What is Claimed:

1. A system for conversion of organic polymeric material to hydrocarbonaceous materials, comprising:

   a thermal cracking train,

   the thermal cracking train configured to effect molecular cracking of a polymeric material fed to the thermal cracking train;

   a condensing train,

   the condensing train configured to receive a thermal cracking product from the thermal cracking train and condense at least a portion of the thermal cracking product to give rise to a pyrolysis oil product from the thermal cracking product; and

   a separating train,

   the separating train configured to receive from the condensing train a first liquid comprising a solid material and the pyrolysis oil product,

   the separating train being configured to separate at least some of the pyrolysis oil product from the first liquid.

2. The system of claim 1, wherein the thermal cracking train is configured to expose the polymeric material to a plurality of temperature zones.

3. The system of any one of claims 1-2, wherein the thermal cracking train is configured to devolatilize a char derived from cracking of the polymeric material.

4. The system of any one of claims 1-2, wherein the system is configured to communicate at least some of the first liquid that exits the condensing train back to the condensing train.

5. A separations train, comprising:

   a separation module,

   the separation module being configured to receive, optionally from a condenser, a feed material comprising a char and a pyrolysis oil product,

   the separation module being operable to separate the char and the pyrolysis oil from one another;

   a receiving line configured to receive pyrolysis oil product from the separation module.

6. The separations train of claim 5, wherein the separation module is characterized as a decanter centrifuge.

7. The separations train of claim 6, wherein the separation module is characterized as a multiphasic decanter centrifuge.

8. A thermal cracking treatment train, comprising:

a rotatable kiln reactor;

the rotatable kiln reactor being configured to receive a polymeric feed material,

the rotatable kiln reactor defining at least one interior wall that bounds an interior volume of the rotatable kiln reactor,

the interior volume defining an entrance and an exit along a direction of feed material travel,

the rotatable kiln reactor comprising a section that comprises one or more sweeping features configured to sweep, with rotation of the kiln, a portion of the at least one interior wall,

the rotatable kiln comprising a section that comprises one or more lifter features extending from the at least one interior wall and configured to, with rotation of the kiln, encourage material disposed on the one or more features to fall into the interior volume of the interior kiln;

a combustor configured to provide a heated gas to the rotatable kiln reactor,

the combustor optionally configured to receive and combust a non-condensed hydrocarbonaceous vapor; and

a devolatilization train,

the devolatilization train optionally comprising a first valve, a holding chamber, and a second valve,

the first valve configured to interrupt fluid communication between the interior volume of the rotatable kiln reactor and the holding chamber, and,

the second valve being configured to interrupt fluid communication between the holding chamber and an environment exterior to the holding chamber.

9. The thermal cracking train of claim 8, further comprising an auger configured to communicate a material into, along, or out of the interior volume of the rotatable kiln.

10. The thermal cracking train of any one of claims 8-9, wherein the rotatable kiln reactor defines one or more chambers disposed about the interior volume of the rotatable kiln reactor, the one or more chambers being configured to receive the heated fluid from the combustor.

11. The thermal cracking train of any one of claims 8-10, wherein the rotatable kiln reactor is configured to define a plurality of temperature zones of different temperature along the direction of material travel.

12. The thermal cracking train of any one of claims 8-11, wherein (1) the one or more sweeping features comprises chains, wherein (2) the one or more lifter features comprise flanges, ridges, or any combination thereof, or both (1) and (2).

13. A condensation train, comprising:

a first condenser configured to condense, from a feed vapor provided to the first condenser, a first liquid that comprises a pyrolysis oil product,

the first condenser optionally configured as a spray down condenser;

a second condenser in fluid communication with the first condenser,

the second condenser configured to receive a first overhead from the first condenser,

the second condenser being configured to condense, from the first overhead, a second liquid that comprises the pyrolysis oil product; and

optionally a third condenser in fluid communication with the second condenser,

the third condenser configured to receive a second overhead from the second condenser,

the third condenser configured to condense, from the second overhead, a third liquid comprising pyrolysis oil product.

14. The condensation train of claim 13, wherein the first condenser is configured as a spray down condenser.

15. The condensation train of any one of claims 13-14, further comprising a fluidic loop configured to communicate first liquid to the first condenser, the fluidic loop optionally comprising an adjustable flow diverter configured to divert at least some of the first fluid to the first condenser.

16. The condensation train of any one of claims 13-15, wherein the first condenser is configured to contact the feed vapor with pyrolysis oil product communicated to the first condenser.

17. An operations unit, comprising:

a first chamber;

a second chamber;

a conduit extending through the first chamber and into the second chamber,

the conduit being at least partially enclosed by a conduit jacket,

the conduit jacket defining an outer diameter,

the conduit placing the second chamber into fluid communication with an environment exterior to the chamber,

the second chamber comprising a wall facing the conduit jacket, and

the second chamber being rotatable relative to the first chamber;

a seal defining a boundary between the first chamber and the second chamber,

the seal extending radially from the wall of the second chamber toward the conduit jacket,

the seal comprising a first flange secured to and extending from the wall of the second chamber, the first flange defining an inner diameter,

(a) the seal comprising a layered portion that comprises a plurality of ring-shaped portions,

at least one of the ring-shaped portions having an inner diameter less than the outer diameter of the conduit jacket such that the at least one of the ring-shaped portions rotatably abuts the conduit jacket, the outer diameter of the conduit jacket optionally no more than about 1.25 cm larger than the inner diameter of the at least one of the ring-shaped portions, or

(b) the seal comprising a brush that rotatably abuts the conduit jacket.

18. The operations unit of claim 17, wherein the first flange comprises a plurality of portions.

19. The operations unit of claim 17, wherein the layered portion is attached to the first flange.

20. The operations unit of any one of claims 17-19, further comprising a circumferentially rotatable joint configured to support rotation of the second chamber.