22. The method of claim 9 wherein performing the room temperature surface treatment comprises etching the substrate.

23. A system for graphene production, the system comprising:

a plurality of gas sources;

a plurality of mass flow controllers, each of the plurality of mass flow controllers coupled to one of the plurality of gas sources;

a processing chamber in fluid communication with the plurality of mass flow controllers;

a plasma source operable to form a plasma in the processing chamber;

a vacuum pump in fluid communication with the processing chamber;

a processor; and

a non-transitory computer-readable storage medium comprising a plurality of computer-readable instructions tangibly embodied on the computer-readable storage medium, which, when executed by a data processor, provide for graphene production, the plurality of instructions comprising:

instructions that cause the data processor to subject a substrate to a reduced pressure environment;

instructions that cause the data processor to provide a carrier gas and a carbon source;

instructions that cause the data processor to expose at least a portion of the substrate to the carrier gas and the carbon source;

instructions that cause the data processor to perform a surface treatment process on the at least a portion of the substrate; and

instructions that cause the data processor to convert a portion of the carbon source to graphene disposed on the at least a portion of the substrate.

24 The system of claim 23 wherein the substrate comprises a copper foil.

25. The system of claim 23 wherein the carrier gas comprises hydrogen and the surface treatment process comprises an RF hydrogen plasma cleaning process.

26. The system of claim 23 wherein the carbon source comprises methane.

27. The system of claim 23 wherein providing the carrier gas and providing the carbon source are performed concurrently.

22. The method of claim 9 wherein performing the room temperature surface treatment comprises etching the substrate.

23. A system for graphene production, the system comprising:

a plurality of gas sources;

a plurality of mass flow controllers, each of the plurality of mass flow controllers coupled to one of the plurality of gas sources;

a processing chamber in fluid communication with the plurality of mass flow controllers;

a plasma source operable to form a plasma in the processing chamber;

a vacuum pump in fluid communication with the processing chamber;

a processor; and

a non-transitory computer-readable storage medium comprising a plurality of computer-readable instructions tangibly embodied on the computer-readable storage medium, which, when executed by a data processor, provide for graphene production, the plurality of instructions comprising:

instructions that cause the data processor to subject a substrate to a reduced pressure environment;

instructions that cause the data processor to provide a carrier gas and a carbon source;

instructions that cause the data processor to expose at least a portion of the substrate to the carrier gas and the carbon source;

instructions that cause the data processor to perform a room temperature surface treatment process on the at least a portion of the substrate; and

instructions that cause the data processor to convert at room temperature a portion of the carbon source to graphene disposed on the at least a portion of the substrate.

24 The system of claim 23 wherein the substrate comprises a copper foil.

25. The system of claim 23 wherein the carrier gas comprises hydrogen and the room temperature surface treatment process comprises an RF hydrogen plasma cleaning process.

26. The system of claim 23 wherein the carbon source comprises methane.

27. The system of claim 23 wherein providing the carrier gas and providing the carbon source are performed concurrently.