WHAT IS CLAIMED IS:

1. A magnetron drive mechanism, comprising a driving assembly, a transmission assembly, a rotating assembly, and a limiting assembly, wherein:

the driving assembly is configured to drive the rotating assembly and the transmission assembly to rotate clockwise or counterclockwise around a first rotation axis;

the driving assembly includes a drive source, a first rotating shaft, and a first rotating arm;

the first rotating shaft and the first rotating arm are connected;

the transmission assembly and the rotating assembly are fixed to the first rotating arm;

the drive source drives the first rotating shaft and the first rotating arm to rotate clockwise or counterclockwise around the first rotation axis;

the first rotating shaft is connected to the rotating assembly through the transmission assembly;

the rotating assembly is connected to a magnetron, and through the transmission assembly, the driving assembly drives the rotating assembly and the magnetron to rotate clockwise or counterclockwise around a second rotation axis, the second rotation axis and the first rotation axis being parallel with each other;

the rotating assembly includes a second rotating shaft and a second rotating arm;

the first rotating shaft is connected to the second rotating shaft through the transmission assembly;

when the first rotating shaft rotates clockwise or counterclockwise, the second rotating shaft rotates clockwise or counterclockwise around the second rotation axis;

the second rotating arm and the second rotating shaft are connected and the magnetron is fixed to the second rotating arm; and

the limiting assembly is configured to block the rotating assembly from rotating clockwise or counterclockwise around the first rotation axis to confine the magnetron to a position at a first radius or a second radius of the first rotation axis, respectively.

2. The magnetron drive mechanism according to claim 1, wherein:

the limiting assembly includes a first limiting member and a second limiting member disposed on the second rotating arm;

when the drive source drives the first rotating shaft to rotate clockwise, the first limiting member contacts with the first rotating arm to block the second rotating arm from continuing to rotate when the magnetron rotates clockwise to a position at a first radius of the first rotation axis; and

when the drive source drives the first rotating shaft to rotate counterclockwise, the second limiting member contacts with the first rotating arm to block the second rotating arm from continuing to rotate when the magnetron rotates counterclockwise to a position at a second radius of the first rotation axis.

3. The magnetron drive mechanism according to claim 2, wherein:

the limiting assembly further includes a third limiting member disposed on the first rotating arm;

when the drive source drives the first rotating shaft to rotate clockwise, the first limiting member contacts with the third limiting member to block the second rotating arm from

continuing to rotate when the magnetron rotates clockwise to the position at the first radius of the first rotation axis; and

when the drive source drives the first rotating shaft to rotate counterclockwise, the second limiting member contacts with the third limiting member to block the second rotating arm from continuing to rotate when the magnetron rotates counterclockwise to the position at the second radius of the first rotation axis.

4. The magnetron drive mechanism according to claim 3, wherein:

the limiting assembly further includes a first position adjustment device and a second position adjustment device;

the first position adjustment device is configured to adjust the position of the first limiting member and/or the second limiting member on the second rotating arm; and

the second position adjustment device is configured to adjust the position of the third limiting member on the first rotating arm.

5. The magnetron drive mechanism according to claim 1, wherein:

the transmission assembly includes a first pulley, a second pulley, and a synchronous belt;

the first pulley is mounted on the first rotating shaft;

the second pulley is mounted on the second rotating shaft; and

the synchronous belt is sleeved on the first pulley and the second pulley.

6. The magnetron drive mechanism according to claim 1, wherein:

the transmission assembly includes a first gear, a second gear, and a third gear;

the first gear is mounted on the first rotating shaft;

the third gear is mounted on the second rotating shaft; and

the second gear meshes with the first gear and the third gear, respectively.

7. The magnetron drive mechanism according to claim 1, further including:

a sealed housing configured to enclose the transmission assembly, connection between the transmission assembly and the driving assembly, and connection between the transmission assembly and the rotating assembly inside the sealed housing.

8. A magnetron assembly, comprising:

a magnetron; and

a magnetron drive mechanism configured to drive the magnetron to rotate at different radii of a first rotation axis, wherein the magnetron drive mechanism is a magnetron drive mechanism according to any of claims 1-7.

9. A reaction chamber, comprising:

a magnetron assembly disposed above a top wall of the reaction chamber, wherein the magnetron assembly is a magnetron assembly according to claim 8.