

ABSTRACT OF THE DISCLOSURE

An electrostatic chuck for a substrate processing system is provided and includes a baseplate, an intermediate layer disposed on the baseplate, and a top plate. The top plate is bonded to the baseplate via the intermediate layer and is configured to electrostatically clamp to a substrate. The top plate includes a monopolar clamping electrode and seals. The monopolar clamping electrode includes a groove opening pattern with coolant gas groove opening sets. The seals separate coolant gas zones. The coolant gas zones include four or more coolant gas zones. Each of the coolant gas zones includes distinct coolant gas groove sets. The top plate includes the distinct coolant gas groove sets. Each of the distinct coolant gas groove sets has one or more coolant gas supply holes and corresponds to a respective one of the coolant gas groove opening sets.