You don’t need seeds to grow MAX phases.

MAX phase alloys are a family of ternary, nanolaminate alloys that have attracted interest recently due to their unique and unusual combination of metallic and ceramic like properties. That is, machinablility, resistance to thermal shock, high thermal and electrical conductivity combined with stiffness, oxidation resistance and high temperature (T>1400°C) stability.

All previous reports of c axis normal oriented growth of Ti2AlC MAX phase thin films have used a TiCx seed layer. In this talk I will discuss pulsed cathodic arc deposition of c axis normal oriented Ti2AlC thin films directly on single crystal sapphire substrates, without the use of a seed layer. Some new results showing that MAX phases are stable with a wide range of elemental compositions will be presented.