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(54) Title: MOLYBDENUM DEPOSITION IN FEATURES

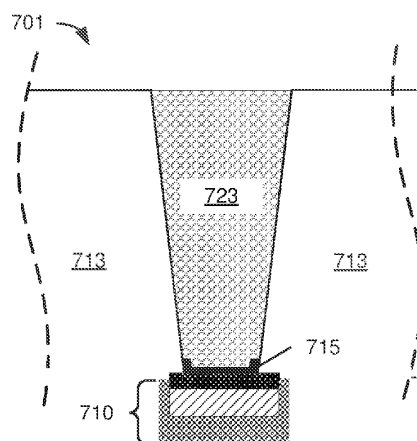


FIG. 7E

(57) Abstract: Provided are deposition processes including depo-
sition of a thin, protective Mo layer using a molybdenum chloride
(MoCl_x) precursor. This may be followed by Mo deposition to fill
the feature using a molybdenum oxyhalide (MoO_yX_z) precursor.
The protective Mo layer enables Mo fill using an MoO_yX_z pre-
cursor without oxidation of the underlying surfaces. Also provid-
ed are in-situ clean processes in which a MoCl_x precursor is used
to remove oxidation from underlying surfaces prior to deposition.
Subsequent deposition using the MoCl_x precursor may deposit an
initial layer and/or fill a feature.

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