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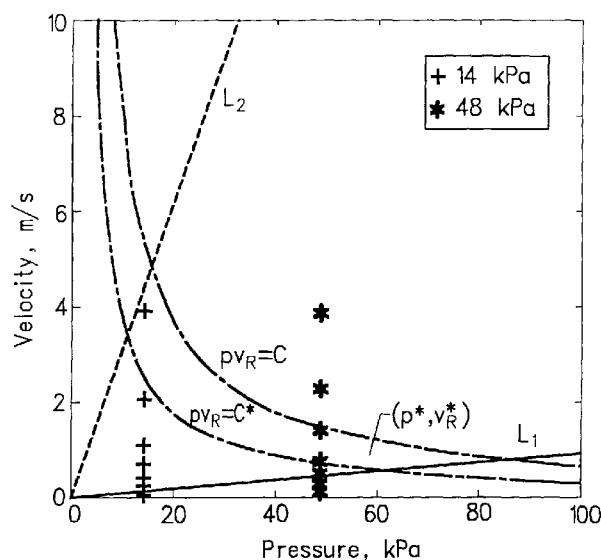
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(54) Title: METHOD OF CHEMICAL MECHANICAL POLISHING



(57) Abstract: In the Chemical Mechanical Polishing (CMP) process employed for microelectronics manufacturing, three contact regimes between the wafer surface and the polishing pad may be proposed: direct contact, mixed or partial contact, and hydroplaning. However, an effective *in situ* method for characterizing the wafer/pad contact and a systematic way of relating contact conditions to the process parameters are still lacking. In this work, the interfacial friction force, measured by a load sensor on the wafer carrier, has been employed to characterize the contact conditions. Models that relate the friction coefficient to the applied pressure, relative velocity, and slurry viscosity are developed and verified by experiments. Additionally, a correlation between friction coefficient and the material removal rate (MRR) is established and the effects of process parameters on the Preston constant are investigated.