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(54) **A method for improving mechanical properties of polymer particles and its applications**

(57) The present invention is related to a method for improving the mechanical hardness of polymer particles.

A method of the invention comprises a thermal cycle of heating and subsequently cooling.

The disclosed method is applicable for use with combinations of preferably three monomers, said monomers having hydrophilic and hydrophobic groups in their polymer chain in order to achieve preferential orientation of the polymer chains in a polar solvent after applying the

heating cycles of the invention (for example, but not limited to, polymethylmethacrylate and polystyrene based terpolymers and copolymers).

The present invention is further related to polymeric abrasives used in slurry compositions for polishing copper and its use in a Chemical mechanical polishing method.

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