

The Novel Process for Nucleic Acid Separation with Molecular Self-Assembled Mesoporous Silicas

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The work describes the innovative development of high throughput human DNA purification using the molecular self-assembled mesoporous silicas. The mesoporous silicas were prepared by sol-gel process and the formation of molecular self-assembled monolayers with functional groups were chemically demonstrated. The surface modification of functional groups was performed with aminofunctionalized organic silanes on mesoporous silicas. The spectroscopic tools such as a FT-IR(ATR-method), DRIFT-UV/Vis., and XRD were used to characterization and solid-state ²⁹Si, ¹³C-NMR were used to determine the chemical information on surroundings of the Si, and C. To elucidate the relationship between surface area and reactivity of the materials, BET and Zetapotential were also used. The target DNA was extracted from human blood and used through the conventional cell lysis. The data of DNA purification was represented with electrophoresis images.