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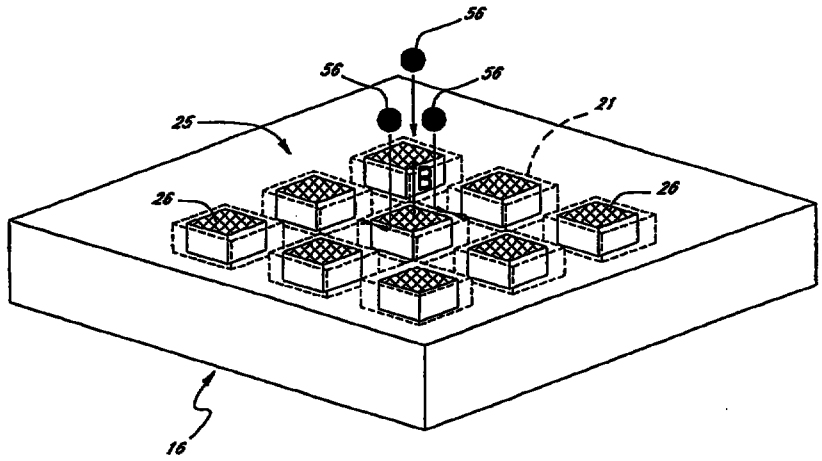
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(54) Title: INDIVIDUALLY ADDRESSABLE MICRO–ELECTROMAGNETIC UNIT ARRAY CHIPS



(57) Abstract

This invention provides electromagnetic chips and electromagnetic biochips having arrays of individually addressable micro–electromagnetic units, as well as methods of utilizing these chips for directed manipulation of micro–particles and micro–structures such as biomolecules and chemical reagents. An electromagnetic biochip comprises an individually addressable micro–electromagnetic unit chip with ligand molecules immobilized on its surface. By controlling the electromagnetic field at each unit of the array and combining this control with magnetic modification of biomolecules, these chips can be used for directed manipulation, synthesis and release of biomolecules in order to increase sensitivity of biochemical or chemical analysis and reduce assay time. Other advantages with these chips include minimized damages to biological molecules and increased reproducibility of assay results.