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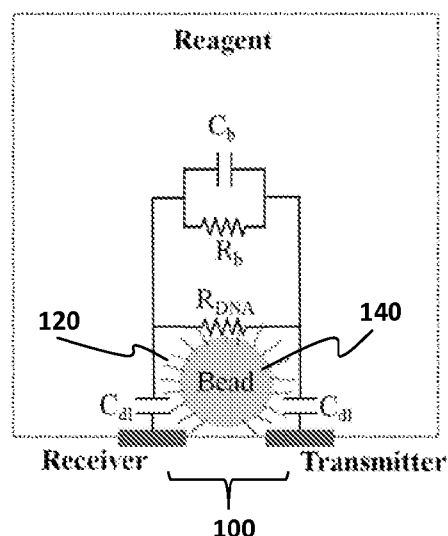
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FIG. 1A



(57) Abstract: The present disclosure relates to systems and methods for high efficiency electronic sequencing of nucleic acids and molecular detection. In an example embodiment of the instant disclosure, the NanoNeedle may be utilized to detect a change in impedance resulting from the modulation of the counter ion concentration or Debye length associated with a biomolecule of interest, such as DNA or protein, for an application of interest, such as DNA sequencing, DNA hybridization, or protein detection.