ABSTRACT

NANO-PCR: METHODS AND DEVICES FOR NUCLEIC ACID AMPLIFICATION AND DETECTION

Methods, devices, and compositions are described that provide for amplification of nucleic acid sequences without reliance upon temperature cycling, thus freeing the methods from conventional benchtop thermal cycling devices. Denaturation of double stranded nucleic acids, primer annealing, and precision control over primer extension by polymerase can be accomplished by applying stress to a nucleic acid. These methods can provide one ore more benefits over conventional PCR methods including: precision control over the PCR process; generally improved fidelity; improved accuracy over problematic sequences such as GC-rich or tandem repeat regions; greater sequence length; increased reaction yield; reduced experimental time; greater efficiency; lower cost; greater portability; and, robustness to various environmental parameters, such as temperature, pH, and ionic strengths

Figure 1A