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DNA electrophoresis in tri-block copolymer gels LING WEI, DAVID VAN WINKLE, Department of Physics, Florida State University, Tallahassee, FL 32306 — Double-stranded DNA ladders were first separated in conventional agarose gel at room temperature. The lanes of well-separated DNA ladders in agarose were cut and trimmed before transferring to Pluronic® F 127, which is a triblock copolymer forming a gel-like phase of micelles arranged with cubic order at room temperature with concentrations higher than 18%. The electrophoresis in F 127 was performed with the electric field perpendicular to the separation direction in agarose. A 10 bp DNA ladder consisting of 10 base pair repeats (10 bp-330 bp), 25 bp DNA ladder consisting of 19 blunt fragments ranging in length from 25 bp-450 bp (at 25 bp increments) plus a 500 bp band, and 250 bp DNA ladder consisting of 14 blunt fragments ranging in length from 250 bp-3500 bp (at 250 bp increments), were used as samples for this two dimensional gel electrophoresis. The continuously decreasing mobility with increasing length observed in the agarose separation is not duplicated in the Pluronic® F 127 separation. Rather, a complicated dependence of mobility on DNA length is observed whereby 100 – 125 bp fragments have the highest mobility and there is also a variation of mobility with length correlated to the micelle diameter.

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