

Electro-hydrodynamic concentration of genomic length DNA: Supplemental Material

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Videos

The videos illustrate the growth of fluorescence intensity. The voltage for the specified centerline velocity, v_0 , was tuned to produce the conditions for optimum concentration growth, as indicated by the solid circles in Fig. 8B. The DNA concentrations in videos 2–4 are indicated by the open circles in Fig. 9 and were selected to be equifluorescent. The colloidal particle concentration was 0.05 pM, which was approximately equifluorescent with the YOYO-1 labeled T4 DNA.

- Video 1: Concentration enhancement of T4 DNA (see Fig. 1A), with a centerline velocity $v_0 = 1200 \mu\text{m/s}$ and initial concentration $c_0 = 0.2 \text{ pM}$. The movie shows the fluorescence intensity at the inlet and outlet.
- Video 2: Concentration enhancement at the inlet of a mixture of T4 (red) and HindIII digest (green) at a high flow rate, $v_0 = 2400 \mu\text{m/s}$.
- Video 3: Selective concentration enhancement of a mixture of T4 and HindIII digest at a low flow rate, $v_0 = 100 \mu\text{m/s}$. The movie begins after the initial mixture has been concentrated for 20 minutes.
- Video 4: Selective concentration enhancement of a mixture of T4 DNA (green) and charged particles (red); $v_0 = 1200 \mu\text{m/s}$.

Spreadsheet: SM.ods

The Supplemental Material contains a spreadsheet (in LibreOffice format) which includes analysis of the experimental data after the initial processing of the tiff images. The file contains six sheets:

- **Calibration** – Intensity data and calibration of β (Eq. 1) for YOYO-1 and YOYO-3.
- **T4** – Intensity growth rates for T4 DNA. One example (highlighted) is used in Fig. 9.
- **Lambda** – Intensity growth rates for λ DNA.
- **Hind III** – Intensity growth rates for Hind III DNA.
- **Rates** – Conversion of intensity data to concentration growth rates shown in Fig. 9.
- **Confocal** – Confocal data shown in Figs. 7A and 7B.

The raw data, in the form of a series of tiff images, are accessible through the University of Florida Institutional Repository at <http://ufdc.ufl.edu//IR00007418/00001>. Images and metadata for each experiment are stored in individual zip files numbered as in the spreadsheet SM.ods.