The ATE samples tested consisted of the following components:

- Previous work has shown that this ATE can be activated in three steps when instilled on the ocular surface: (1) blinking (shear stress) to form colloidally stable oil droplets. The emulsion contains

- Several important mechanistic characteristics of the ATE were identified. The ATE composition functions to both protect the eye by maintaining a slow-draining, high-surface-energy, low-viscosity film and to stimulate the formation of hydrocarbon-dominated thin films, using a National Bureau of

- The formation of oil-dominant surfactant films under the initial spreading conditions is consistent with increased spreading pressure for the hydrocarbon phase, as first discovered and utilized by N.K. Adam. The surfactant molecules remain bound at the original aqueous/air interface, directing their carbon-long side chains into the aqueous/air interface, and as do natural surface films of lipids and glycoproteins, potentially as a result of a competition for the positively charged sites produced by the natural thinning of these films.

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- The viscosity decreased as a function of shear rate indicating the ATE can be thinned through instillation and blink event. The viscosity was measured as shear rate using a series of laser-Doppler anemometers, Teflon spheres, and techniques presented by Korb and Greiner. To qualify, patients had to give a positive response to the questions “Do you ever feel your contact lenses move or do you ever experience any discomfort during the first few minutes after instilling a drop of eye drops?” followed by a second rinse cycle following application to pericardium tissue for 20 minutes. The ATE, pH 7.8, no sorbitol had the largest Cof compared to the control, optimal formulation for the various properties observed after instillation.

- FIGURE 2. Light Microscopy of Emulsion (ATE) Drops on Mineral Oil. Spreading and Interchanging Characteristics

- Ellipsometry (3rd transfer, 12 ± 2 Angstroms; 2nd transfer, 16 ± 7 Angstroms) was used to measure the thicknesses of the transferred films, using a National Bureau of

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- FIGURE 3. Average Coefficient of Friction Data: After 2 minutes following application to pericardium tissue for saline control, marketed emulsion eye drop and ATE, pH 7.8, no sorbitol.

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- FIGURE 5 shows a micrograph representation of an ATE film on a glass slide that was spin and subsequently dried with saline to show the mineral oil and demulcent film adhesion to HPG and the aqueous/air interface. As illustrated by the collected MAIR-IR spectra in Figure 6, the mineral oil and demulcent film adhesion to HPG and the aqueous/air interface. The oil droplets within the Langmuir trough were transferred after their compression to the prisms as the available surface area was slowly reduced. Multiple Attenuated Internal Reflection InfraRed (MAIR-IR)

- As illustrated by the collected MAIR-IR spectra in Figure 6, the mineral oil and demulcent film adhesion to HPG and the aqueous/air interface. FIGURE 2. Light Microscopy of Emulsion (ATE) Drops on Mineral Oil. Spreading and Interchanging Characteristics

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