

Abstract Submitted
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HemoClearTM: A Thin Fluid Film Device (TFFDTM) and Model to Eliminate both Fogging and Blood on Surgical Lenses SALONI SINHA, AJJYA ACHARYA, ASU Department of Chemistry and Biochemistry, NICOLE HERBOTS, Department of Physics, CLARIZZA WATSON, SiO₂ Nanotech LLC, ERIC CULBERTSON, University of California at Los Angeles, MARK MATISKI, Department of Chemistry and Biochemistry, ADAM ORR, Department of Life Sciences, ROSS BENNET-KENNET, Department of Physics, ASHLEE MURPHY, Department of Chemistry and Biochemistry, ERIC MORGAN, ALEX BRIMHALL, ROBERT CULBERTSON, Department of Physics — In closed body cavity surgery, blood and water condensation can obstruct surgeons' view through scopes lenses. This forces surgeons to repeatedly remove scopes to wipe lenses during surgery, and increases surgery duration, infection risk and scarring by 10- 40%. HemoClearTM, a Thin Fluid Film Device (TFFDTM), is a layered emulsion combining VitreOxTM and fibrinogen. [1,2] VitreOxTM is an anti-fog TFFDTM, free of optical aberration, optically transparent, and super-hydrophilic, stable for up to 48 hours in closed body-cavity surgery. We find that fibrinogen can evacuated blood without interfering with anti-fog properties VitreOxTM via he hemo-affinity of fibrinogen and hydro-affinity of VitreOxTM. The mixing and layering of the components of HemoClearTM are tested via *in vitro* clinical trials to optimize our TFFDTM with the smallest effective dose of fibrinogen. A model for 2-D versus 3-D condensation and hemo-affinity will be discussed. [1] N. Herbots, et al. Prov. Pat. filed 11/10/09, 11/3/11 [2] N. Herbots, et al. PCT/US12/62196 Internat. Pat. filed 11/10/10, 10/26/12

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