

Electronic Supplementary Information

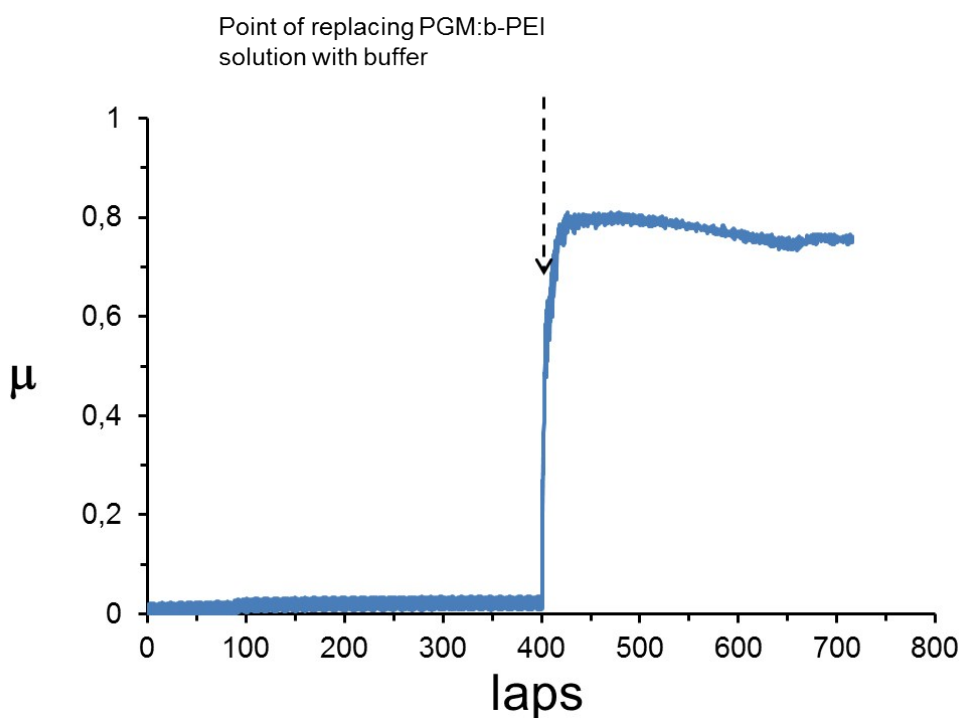
## Complexation and synergistic boundary lubrication of porcine gastric mucin and branched poly(ethyleneimine) in neutral aqueous solution

Navinkumar J. Patil,<sup>a</sup> Sankaranarayanan Rishikesan,<sup>b</sup> Nikolaos Nikogeorgos,<sup>b</sup> Rita Guzzi,<sup>a</sup> Seunghwan Lee,<sup>\*b</sup> and Bruno Zappone<sup>\*c</sup>

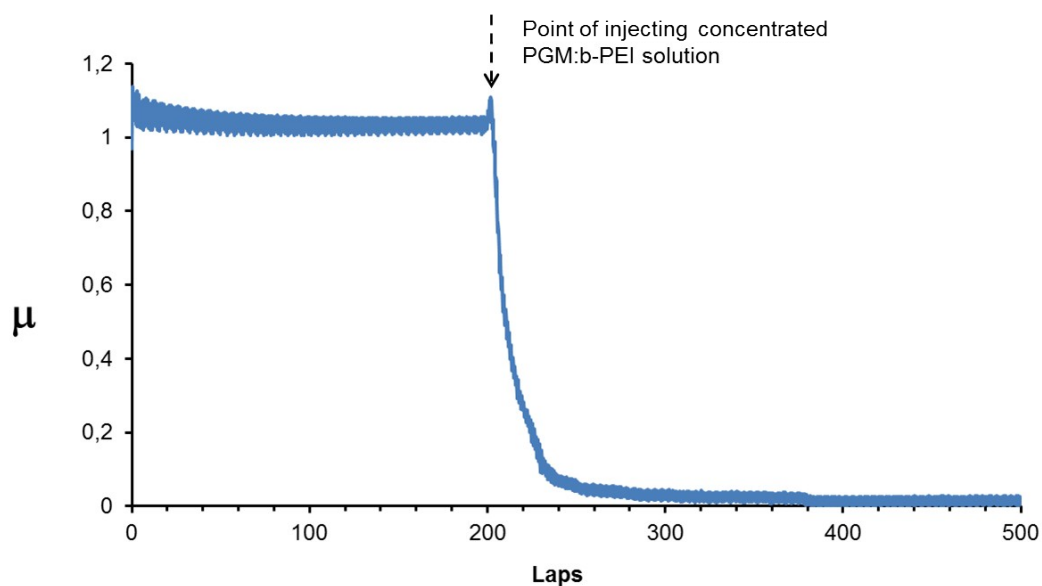
<sup>a</sup>Dipartimento di Fisica, Università della Calabria, Cubo 31/C, 87036 Rende (CS), Italy

<sup>b</sup>Department of Mechanical Engineering, Technical University of Denmark, DK-2800, Kgs. Lyngby, Denmark

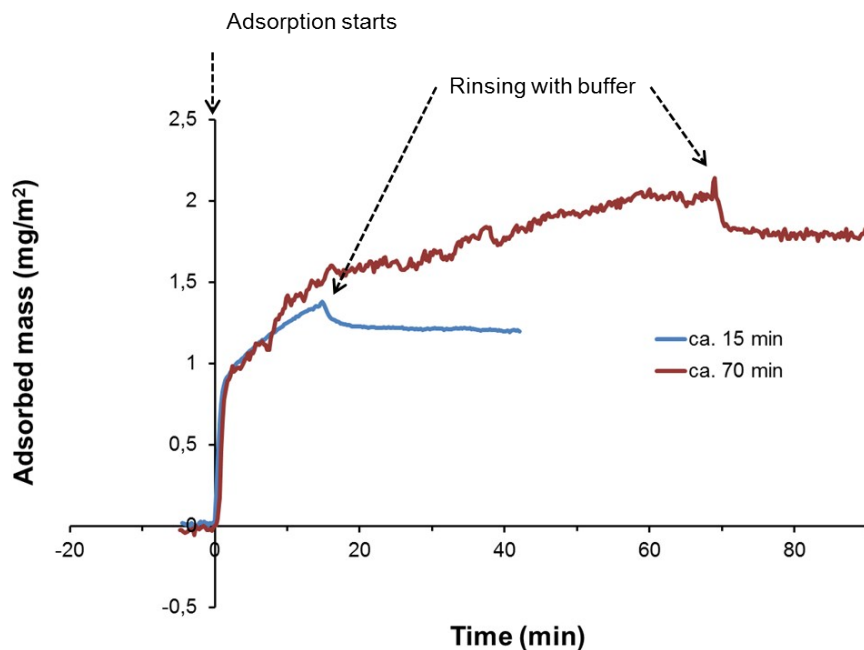
<sup>c</sup>Consiglio Nazionale delle Ricerche - Istituto di Nanotecnologia (CNR-Nanotec), SS Cosenza - LICRYL, c/o Dipartimento di Fisica, Università, della Calabria, Cubo 33/B, Rende (CS) 87036 Italy



**Figure S1.** Control experiment showing the effect of replacing 1:1 PGM:b-PEI mixture with PBS buffer. The sliding speed of pin-on-disk tribopair was set to 5 mm/s and the load to 1 N. The sliding was shortly paused and the pin was lifted up at the point indicated by the arrow. Sliding was resumed immediately after replacing the PGM:b-PEI solution with the buffer.



**Figure S2.** Control experiment showing the effect of adding 1 mL of PGM:b-PEI mixture (1:1 w/w ratio with total concentration 3 mg/mL) to the PDMS tribopair sliding in 2 mL of PBS buffer. The synergistic lubricating effect was immediately manifested upon injecting the mixture and was stabilized within ca. 5 minutes. The PGM:b-PEI concentration after injection was 1 mg/mL (1:1 w/w ratio), the sliding speed was 5 mm/s and the load was 1 N.



**Figure S3.** Example of OWLS data showing the kinetics of adsorption of PGM from 1mg/ml solution in PBS. At the times indicated by arrows (15 min and 70 min), the surface was rinsed with PBS buffer, producing a slight desorption. Adsorption continued up to 70 min but the adsorption rate became very low after about 60 min.