Supplementary Material for Manuscript: "Nanoparticle-based, solution deposition of gold films supporting bioresistant SAMs" by *Bartlomiej Kowalczyk,[1,2] Marta Byrska,[1] Goher Mahmud,[1] Sabil Huda,[1] Kristiana Kandere-Grzybowska[1,2] and Bartosz A. Grzybowski[1,2,]**

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1. Stability of commercial vs. nanoparticle films during pre-cleaning procedure.

The major reason we pursued the research on NP films is that the thermally/e-beam evaporated films either from Northwestern's facility or from commercial sources were unreliable. Not only the functionalization of these films with EG thiols often failed to produce bioresistant SAMs, but in ca. 30% of cases the films delaminated prior to SAM formation, during the pre-cleaning step. This is illustrated in the figure below, which shows a direct comparison between commercial gold (from company X, Fig. S1a-c) and our NP-based films (Fig. S1d) subject to sonication in 0.1 M KOH solution of an oxidizing agent and popular detergent, Alconox. As seen, the commercial film peels off (despite having a titanium adhesion layer), while the NP one remains intact.

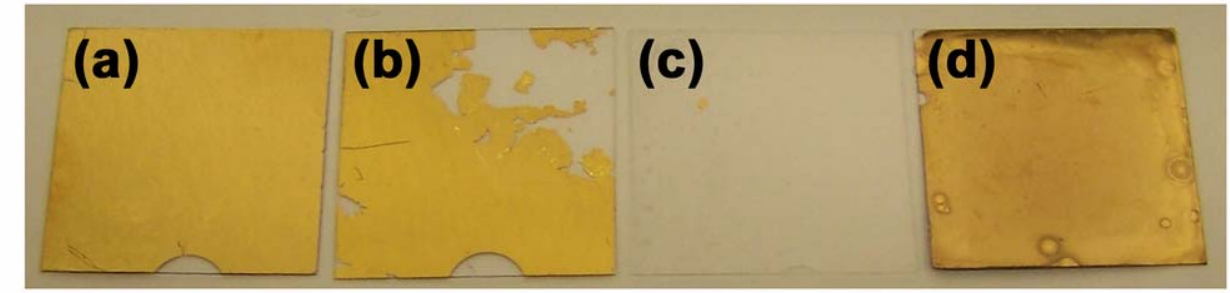

Figure S1. Test for the durability of 50 nm gold films on glass substrate during sonication in alkaline solution of Alconox. **(a)** Commercial (company X), e-beam evaporated gold with additional adhesive layer of titanium **(b)** starts peeling off the glass after ~30 sec and **(c)** delaminates completely after few minutes. **(d)** In sharp contrast, the baked film of AuNPs adheres strongly during the same conditions.