

Supporting information

Synthesis of Biocompatible Superparamagnetic Iron Oxide Nanoparticles (SPION) under Different Microfluidic Regimes

Jörg Schemberg,^{1*} Abdelouahad El Abbassi,¹ Annerose Lindenbauer,¹ Li-Yu Chen,^{1,2}
Andreas Grodrian,¹ Xenia Nakos,¹ Gurunath Apte,^{1,3} Nida Khan,^{1,4} Alexander Kraupner,⁵
Thi-Huong Nguyen,^{1,4*} and Gunter Gastrock¹

¹*Institute for Bioprocessing and Analytical Measurement Techniques (iba), 37308 Heiligenstadt, Germany*

²*Department of Infection Biology, Leibniz Institute for Natural Product Research and Infection Biology, 07745 Jena, Germany*

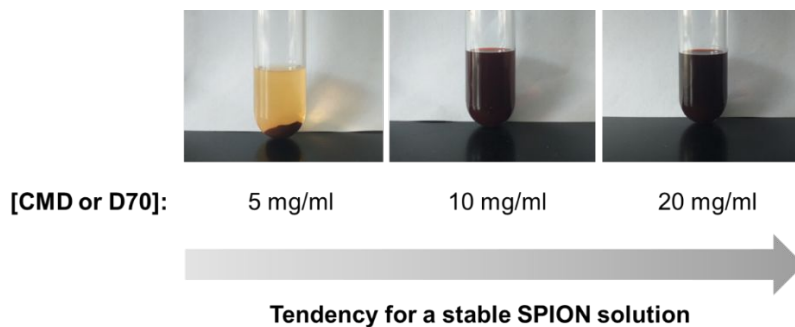
³*Institute of Nanotechnology (INT) and Karlsruhe Nano Micro Facility, Karlsruhe Institute of Technology, 76131 Karlsruhe, Germany*

⁴*Faculty of Mathematics and Natural Sciences, Technische Universität Ilmenau, 98694 Ilmenau, Germany*

⁵*nanoPET GmbH, Luisenarée, Robert-Koch-Platz 4, 10115 Berlin, Germany*

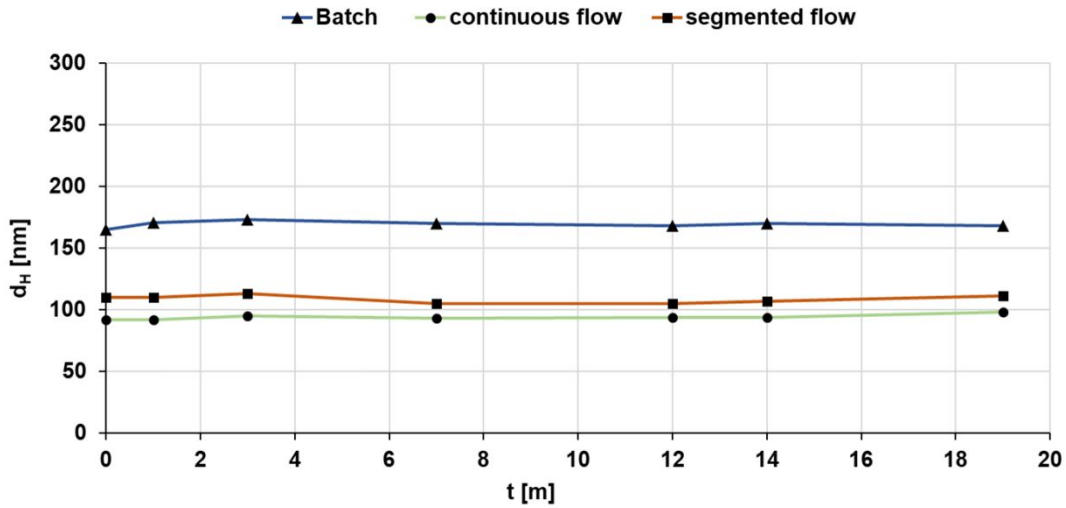
**E-mails: joerg.schemberg@iba-heiligenstadt.de; thi-huong.nguyen@iba-heiligenstadt.de*

Figure S1. SPION coated with different concentrations of CMD or D70.



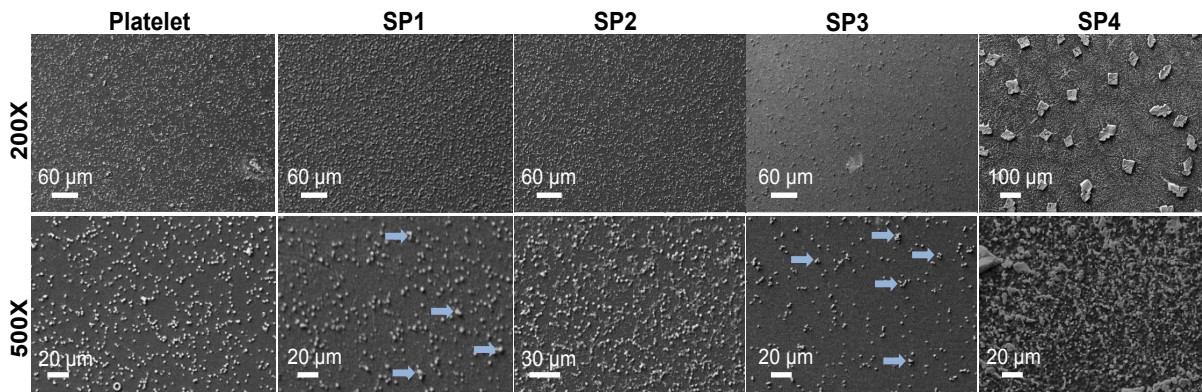
At 5 mg/mL, aggregation occurred while stable particle conditions from 10 mg/mL could be observed.

Figure S2. Stabilization of CMD coated SPION determined by DLS.



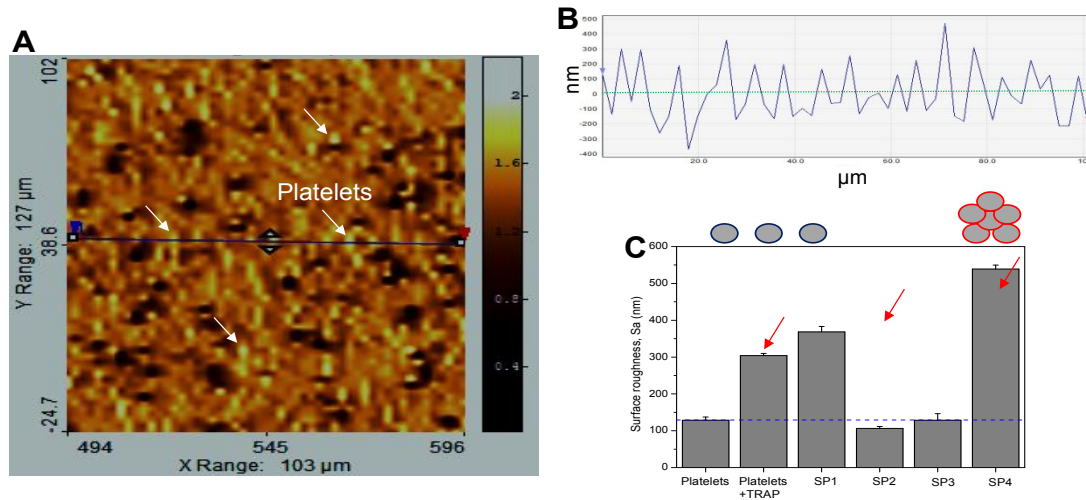
The hydrodynamic sizes (d_H) did not change for particles synthesized by batch (blue), continuous (green), and segmented flow (red-brown) for the time up to 19 months (t [m]).

Figure S3. SEM images for the platelets labeled with SPIONs.



No aggregation formed by SP2 which is comparable to platelet alone while slight aggregation (arrows) was induced by SP1, SP3 while SP4 induced the strongest aggregation of platelets. Magnification of 200 X (upper panel) and 500 X (low panel).

Figure S4. Determination of height changes of platelets labeled with SPION by WLI.



(A) typical image shows the morphology of platelets (arrows) on the glass surface and a line profile (blue) allows determination of the roughness of the surface or the (B) height of platelets; (C) quantification of the height from multiple surfaces shows a similar value among platelet alone, SP2 and SP3 while SP1 and SP4 SPION induce higher surface roughness than others including TRAP, indicating aggregation of platelets induced by TRAP, SP1, and SP4 particles.