

Supporting Information

Eumelanin thin films: solution-processing, growth, and charge transport properties

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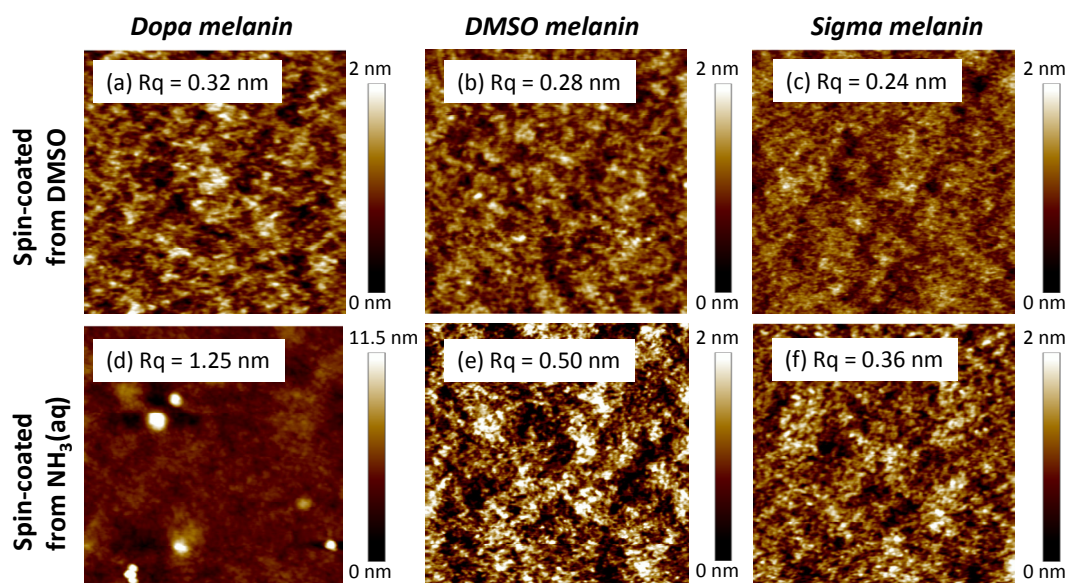


Fig S1 $1\ \mu\text{m} \times 1\ \mu\text{m}$ AFM images of 30 nm thick films of different eumelanins spin-coated from DMSO and $\text{NH}_3(\text{aq})$ suspensions as indicated. The root mean square roughness R_q is indicated for each film.

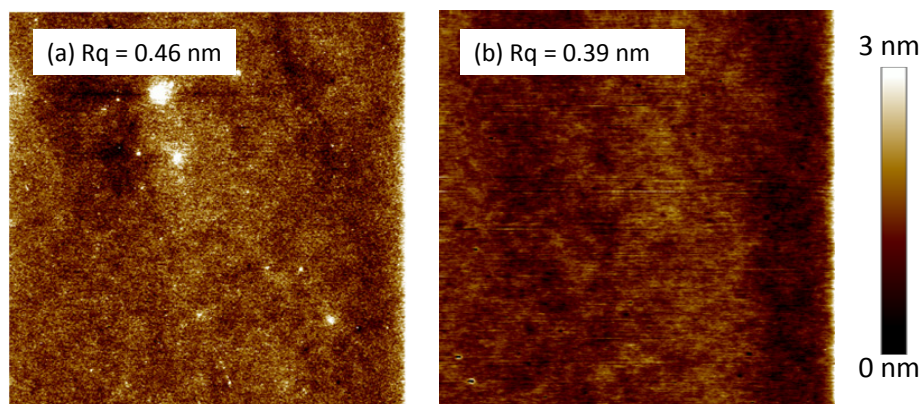


Fig. S2 $10\ \mu\text{m} \times 10\ \mu\text{m}$ AFM images of drop cast films of (a) *DMSO melanin* on glass and (b) *Sigma melanin* on Si. In both cases, a DMSO suspension of 3mg/ml concentration was used. The root mean square roughness R_q is indicated for each film.

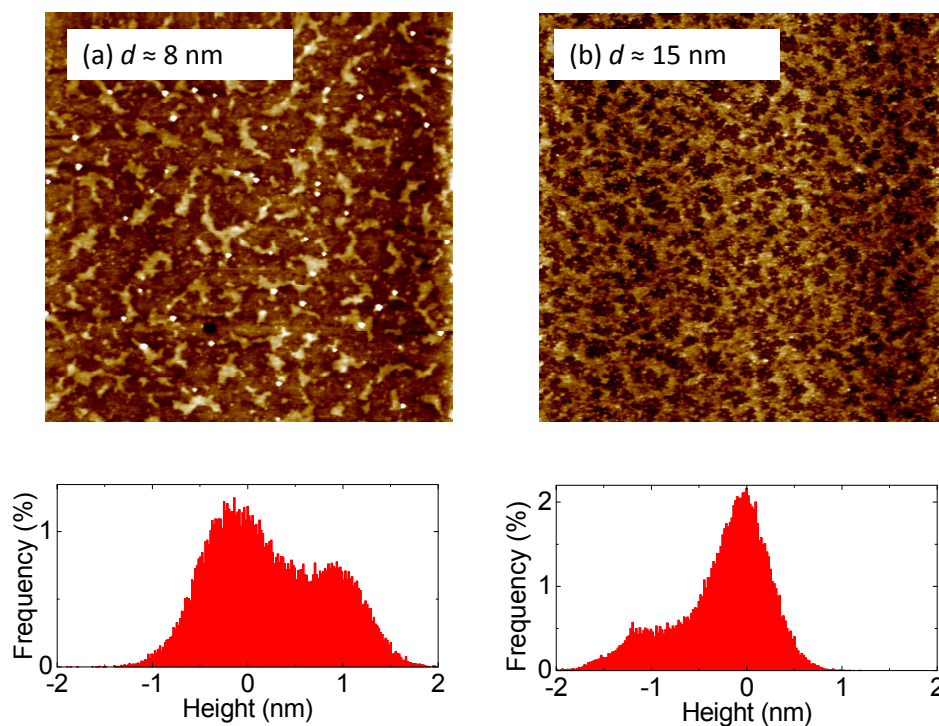


Fig. S3 $10\ \mu\text{m} \times 10\ \mu\text{m}$ AFM images of *DMSO melanin* films of about 8 and 15 nm thickness, spin-coated from DMSO suspension (top) and the corresponding height histograms (bottom). Z-scale: 4 nm. The morphology is dominated by planar islands, about 1 nm high.

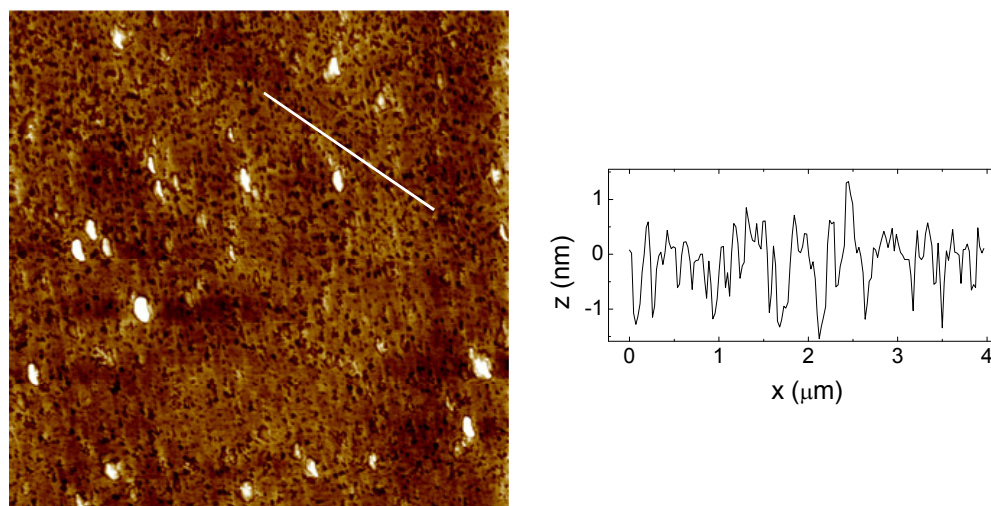


Fig. S4 $10\ \mu\text{m} \times 10\ \mu\text{m}$ AFM image of a *Dopa melanin* drop cast from DMSO suspension (3 mg/ml) on SiO_2 and height profile corresponding to the white line. Z-scale: 5 nm. The surface of the film is covered with holes, about 1.5 nm deep.

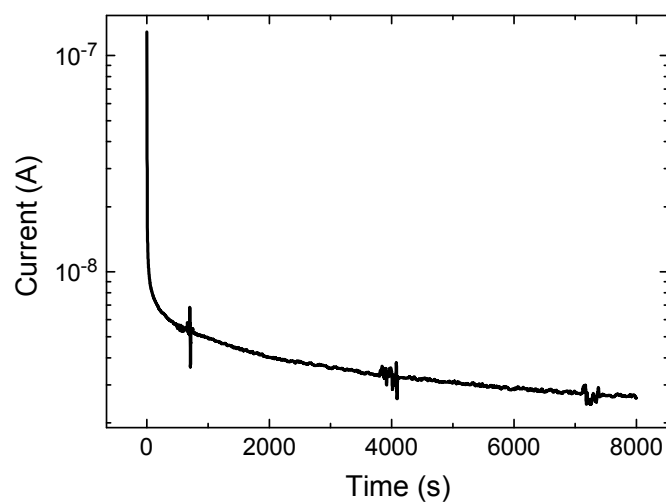


Fig. S5 Transient current measurement on a *Sigma melanin* film, about 30 nm thick, at 90% RH and an electrical bias of 0.6 V. $L = 10\ \mu\text{m}$ and $W = 7810\ \mu\text{m}$. The current decreases more and more slowly without reaching a steady state.