# New surfactant engineering for producing water-borne colloids of polymeric semiconductors following high charge carrier mobility of 2.5 $cm^2$/Vs

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We introduce a new method of fabricating water-borne colloids of semiconducting polymers for use in environmentally benign processes involving organic electronics, without compromising the high charge carrier mobility of the polymeric semiconductors. Non-ionic surfactants were utilized as a key material to fabricate aqueous colloids of semiconducting polymers via a miniemulsion process. By developing smart surfactant engineering techniques, we could selectively remove non-ionic surfactants after film-form, rendering efficient inter-particle charge coupling. We introduced such non-ionic surfactants-technique onto a donor-acceptor type polymeric semiconductor, resulting in a high-mobility (~2.51 cm2 V-1 s-1) water-borne polymer field effect transistor.