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APPENDICES

APPENDIX A Adsorption Isotherm

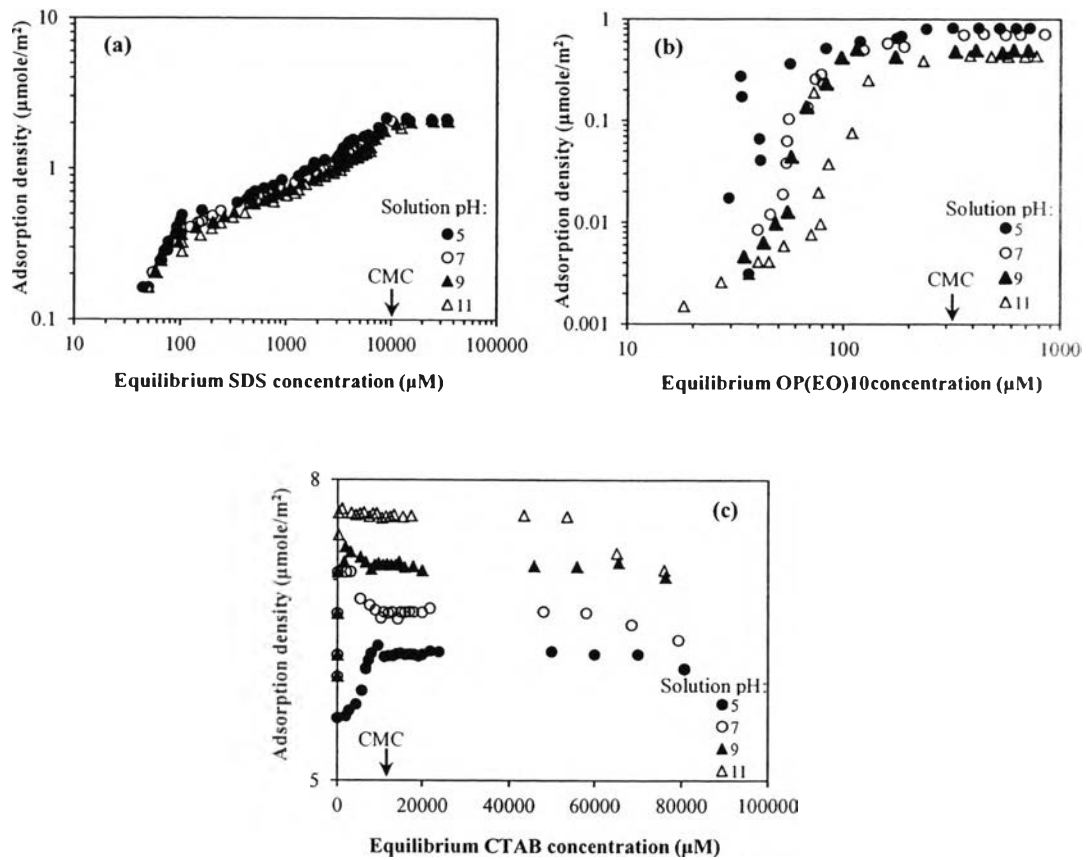


Figure A1 Adsorption isotherm of (a) SDS, (b) OP(EO)10, (c) CTAB surfactants on carbon black, with pH control at constant temperature 30°C.

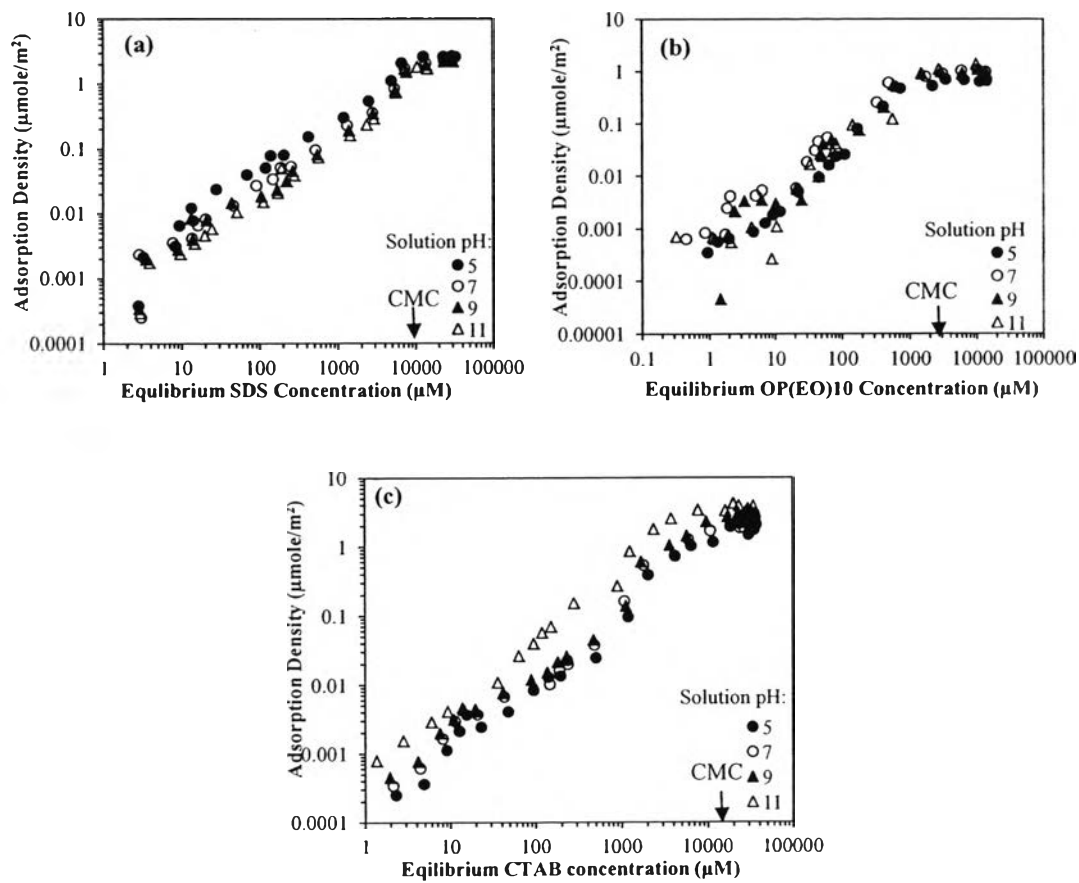


Figure A2 Adsorption isotherm of (a) SDS, (b) OP(EO)10, (c) CTAB surfactants on ferric oxide, with pH control at constant temperature 30°C .

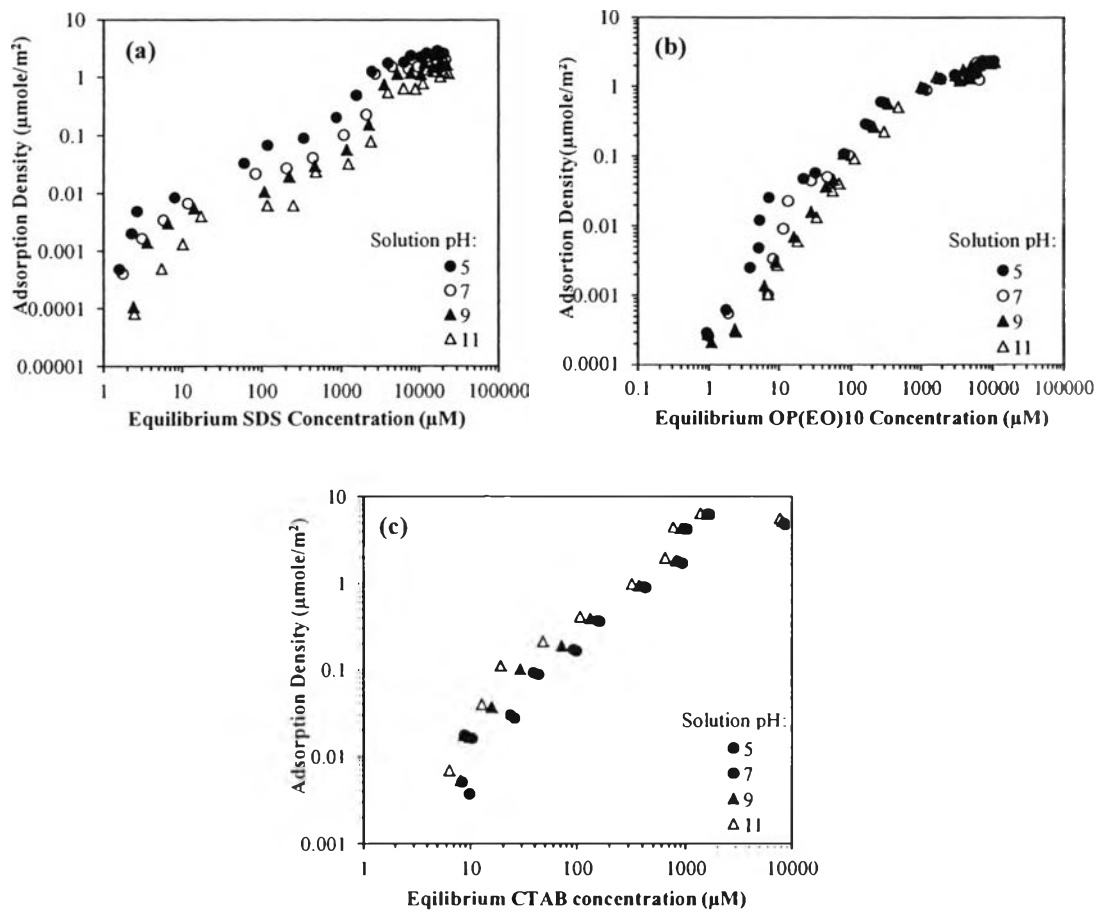


Figure A3 Adsorption isotherm of (a) SDS, (b) OP(EO)10 and (c) CTAB surfactants on kaolinite, with pH control at constant temperature 30°C.

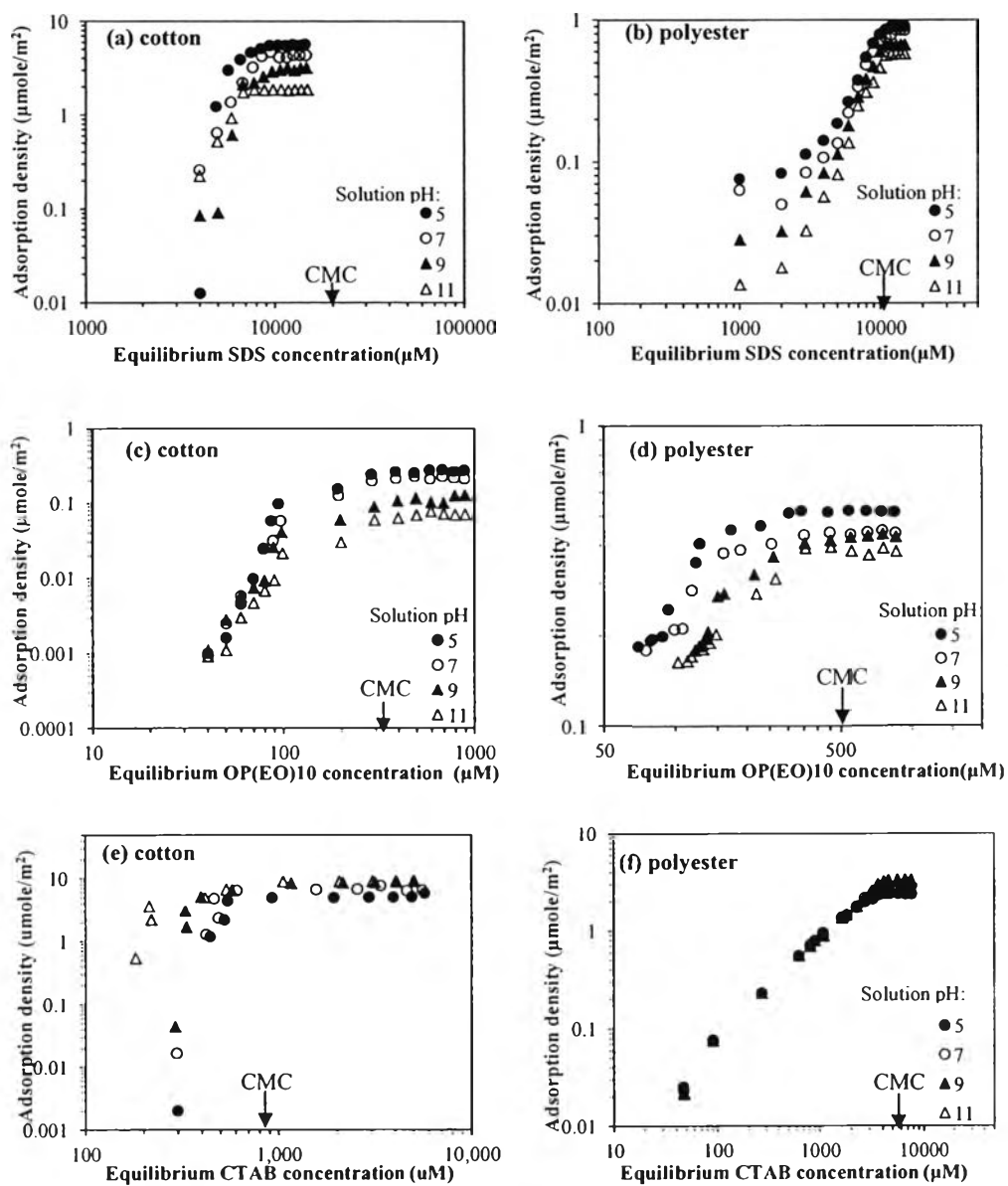


Figure A4 Adsorption isotherm of SDS, OP(EO)10 and CTAB surfactants on cotton and polyester fabrics with pH control at constant temperature 30°C.

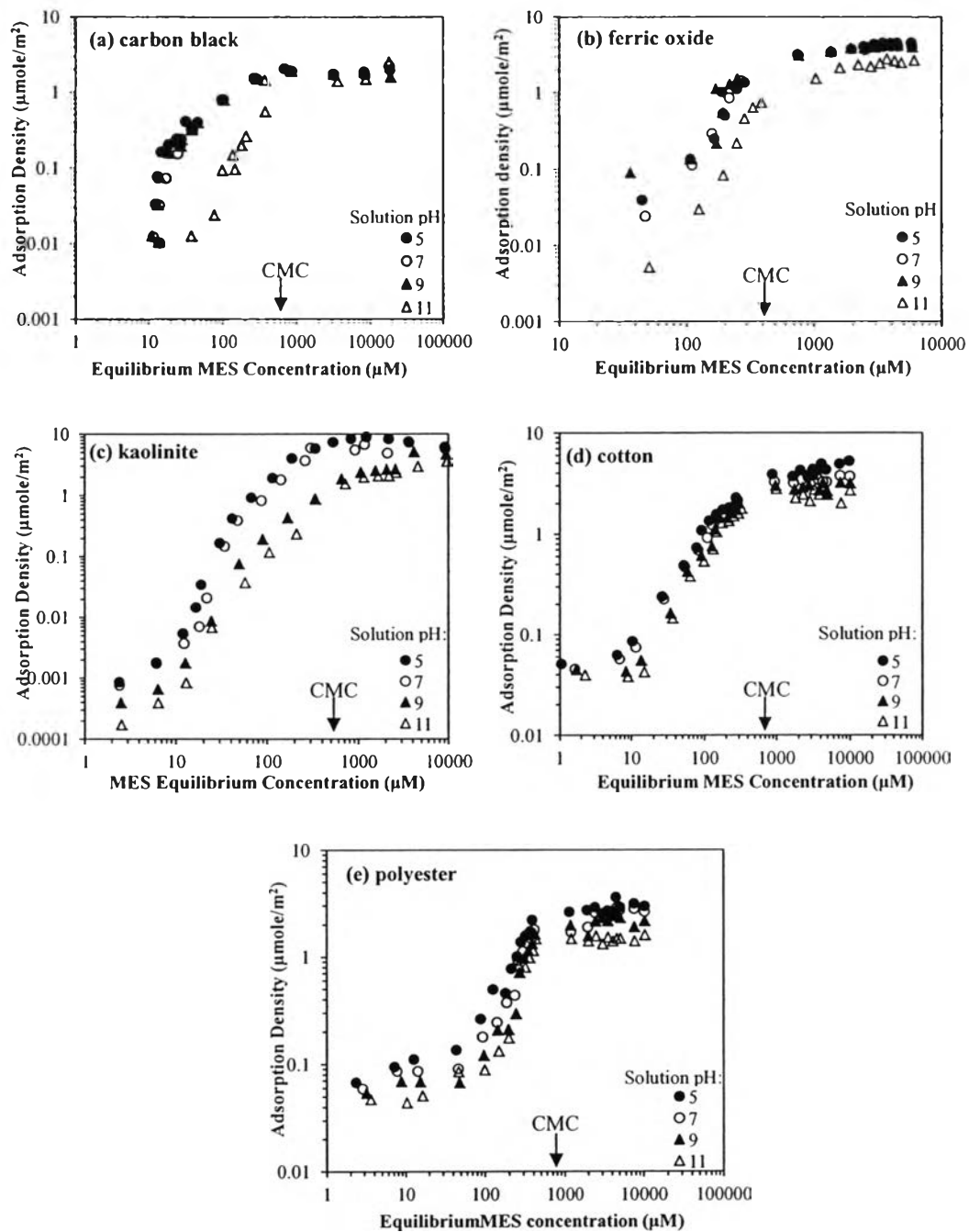


Figure A5 Adsorption isotherm of MES on (a) carbon black, (b) ferric oxide, (c) kaolinite, (d) cotton, and (e) polyester with pH control at constant temperature 30°C.

APPENDIX B Zeta Potential Measurements

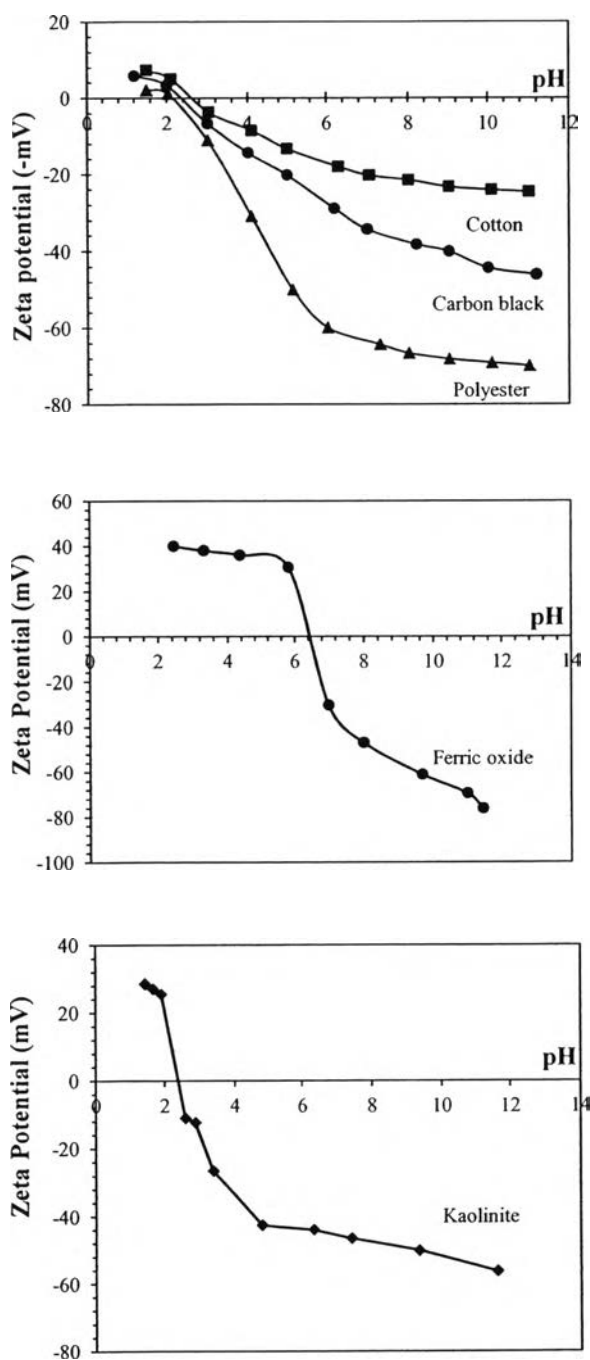


Figure B1 Zeta potential (mV) Vs solution pH for surfactant-free solution.

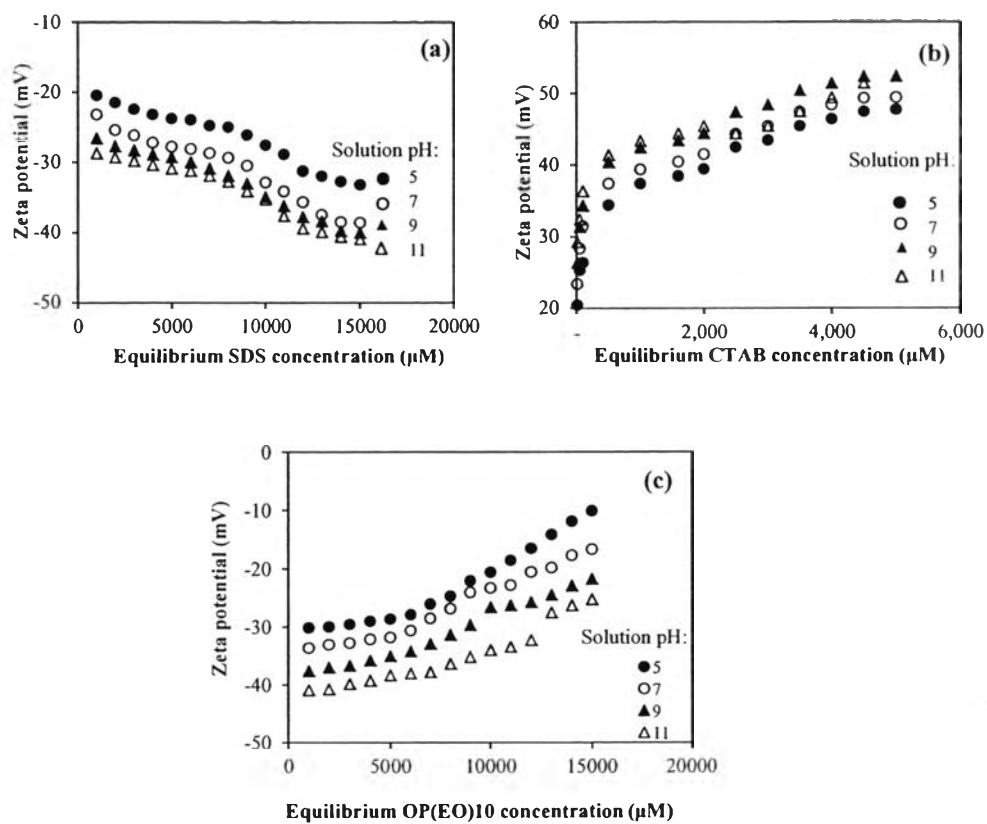


Figure B2 Zeta potential (mV) of carbon black in the presence of SDS (a), OP(EO)10 (b), and CTAB (c) at various surfactant concentrations and solution pH of 5, 7, 9 and 11

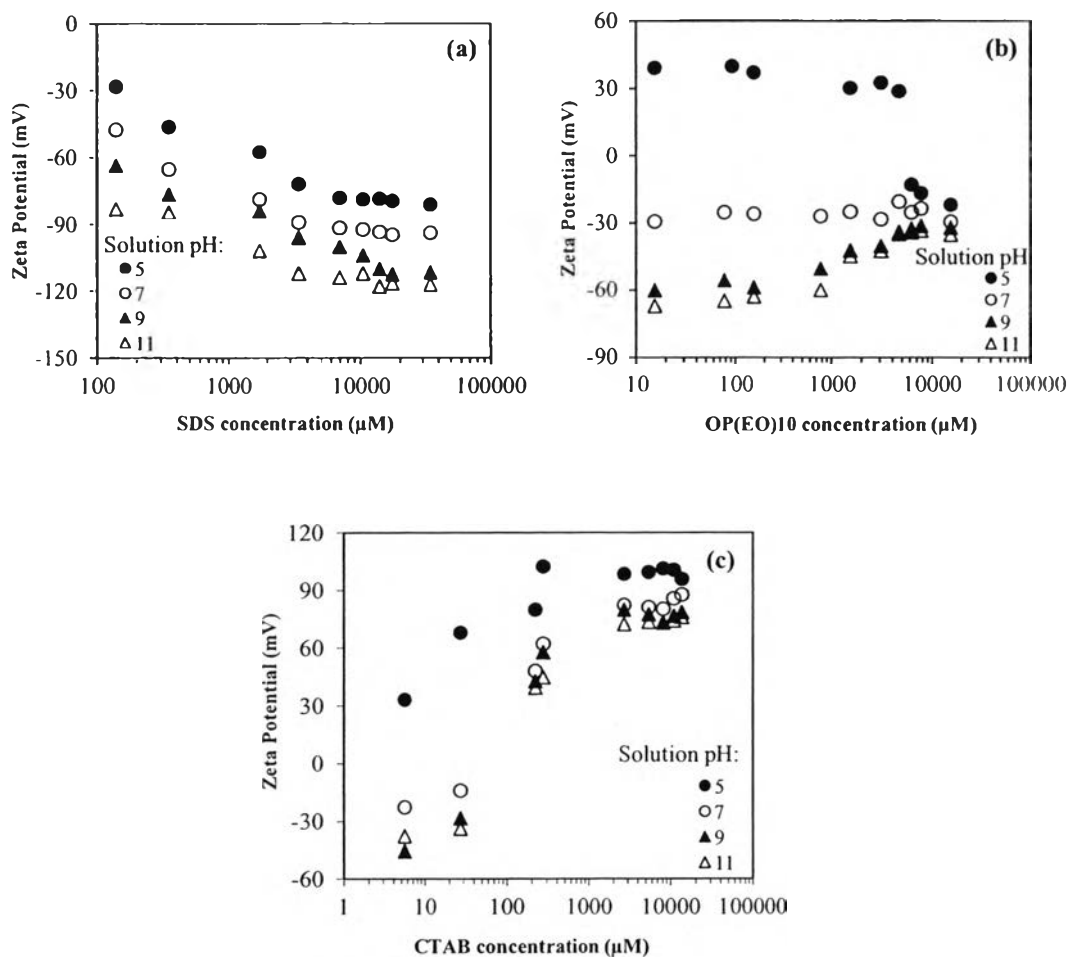


Figure B3 Zeta potential (mV) of ferric oxide in the presence of SDS (a), OP(EO)10 (b), and CTAB (c) at various surfactant concentrations and solution pH of 5, 7, 9 and 11.

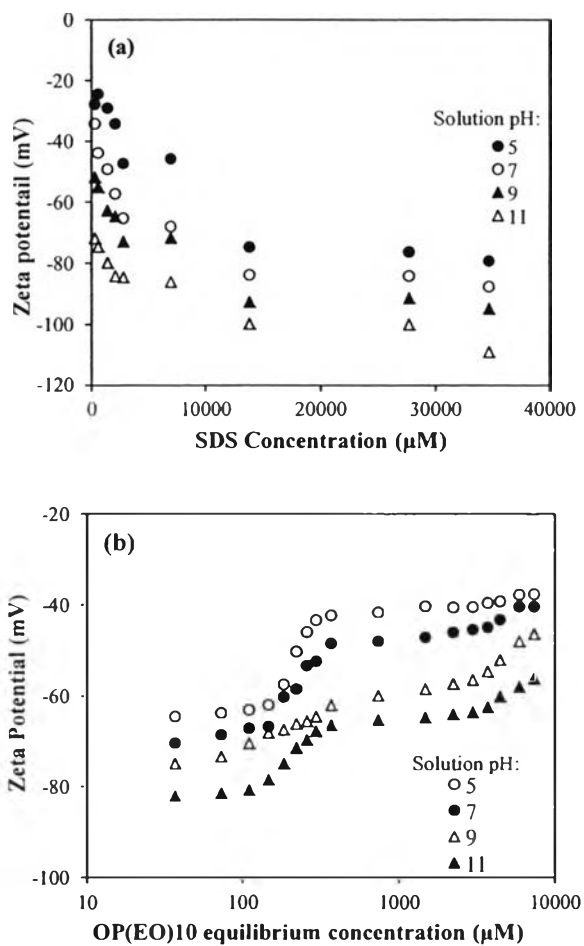


Figure B4 Zeta potential (mV) of kaolinite in the presence of (a) SDS and (b) OP(EO)10 at various surfactant concentrations and solution pH of 5, 7, 9 and 11.

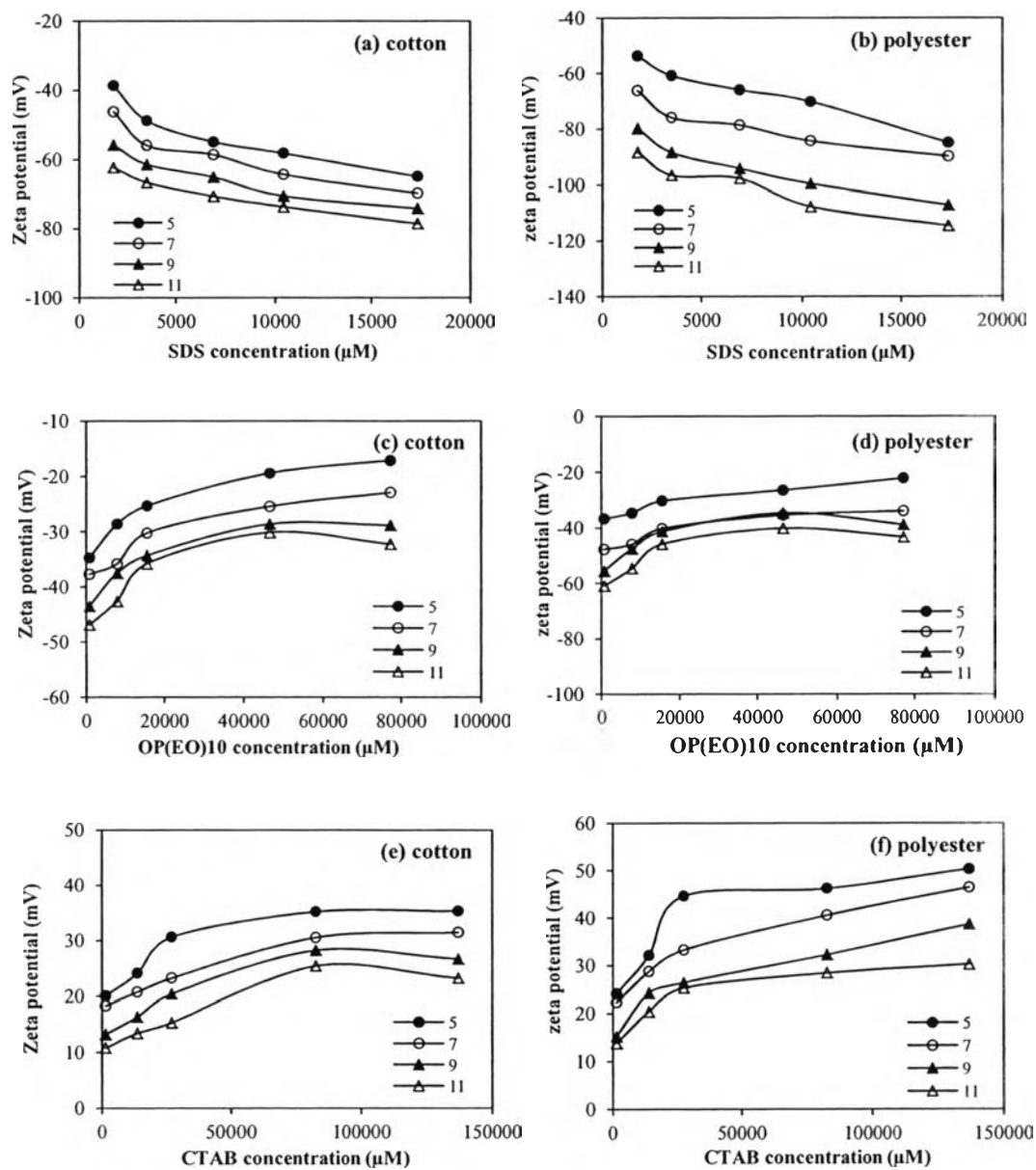


Figure B5 Zeta potential (mV) of cotton and polyester in the presence of SDS (a), OP(EO)10 (b), and CTAB (c) at various surfactant concentrations and solution pH of 5, 7, 9 and 11.

APPENDIX C Contact Angle Measurements

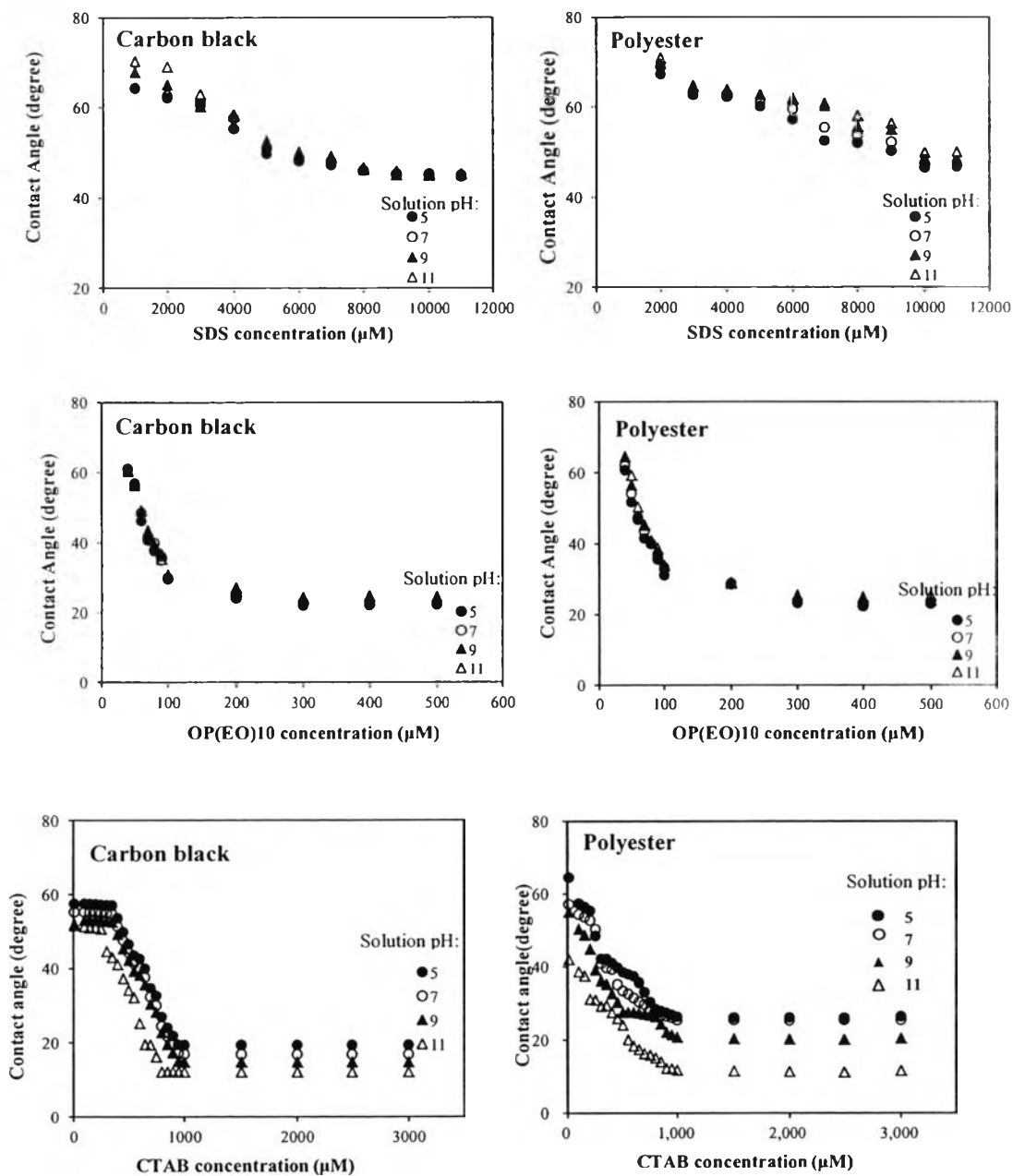


Figure C1 Contact angle of SDS, OP(EO)10 and CTAB surfactants on carbon black and polyester fabric at constant temperature of 30°C and pH 5, 7, 9 and 11.

APPENDIX D Detergency Experiments

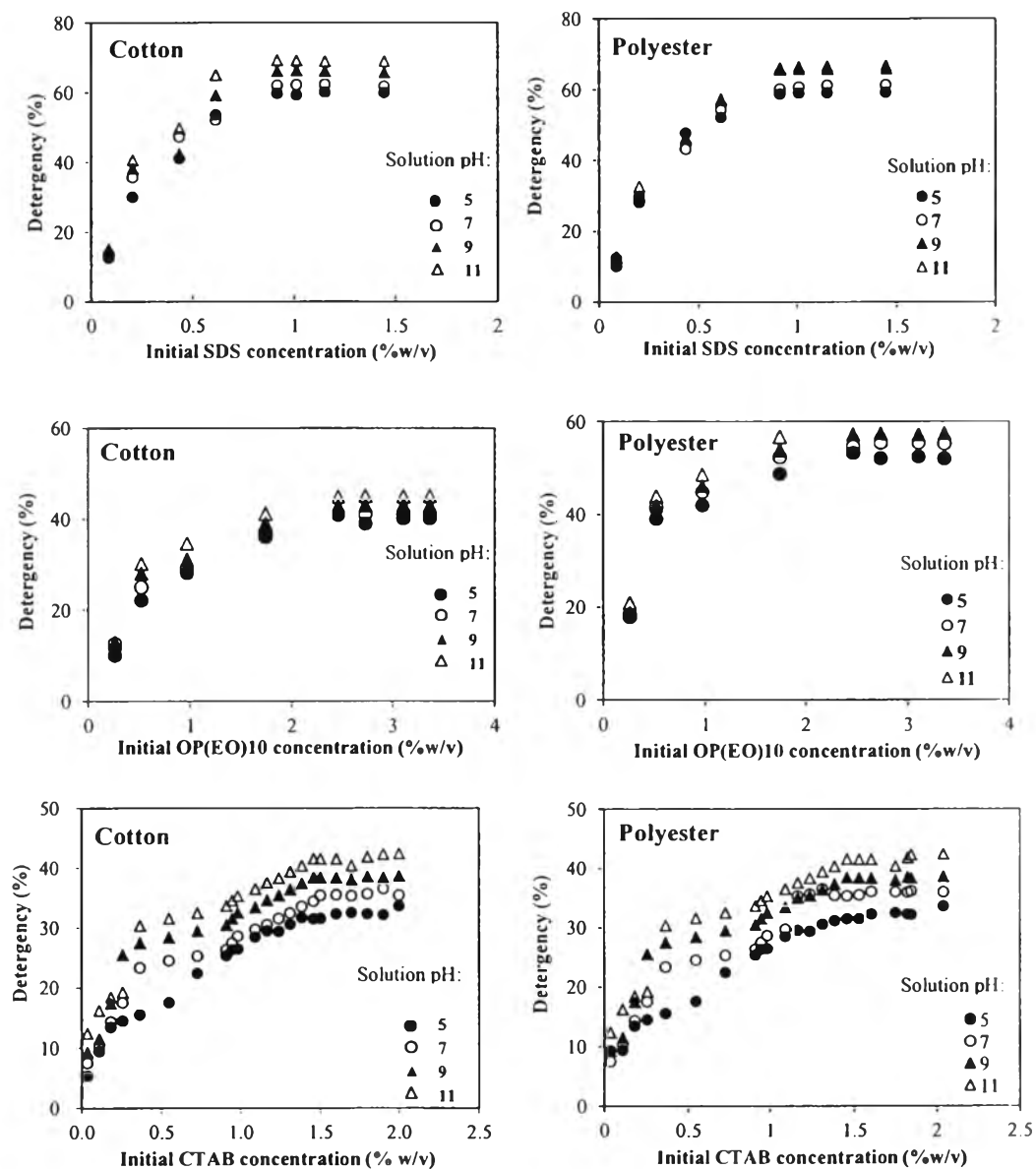


Figure D1 Detergency performance of carbon black removal in the presence of SDS, OP(EO)10 and CTAB surfactants at constant temperature of 30°C and pH 5, 7, 9 and 11.

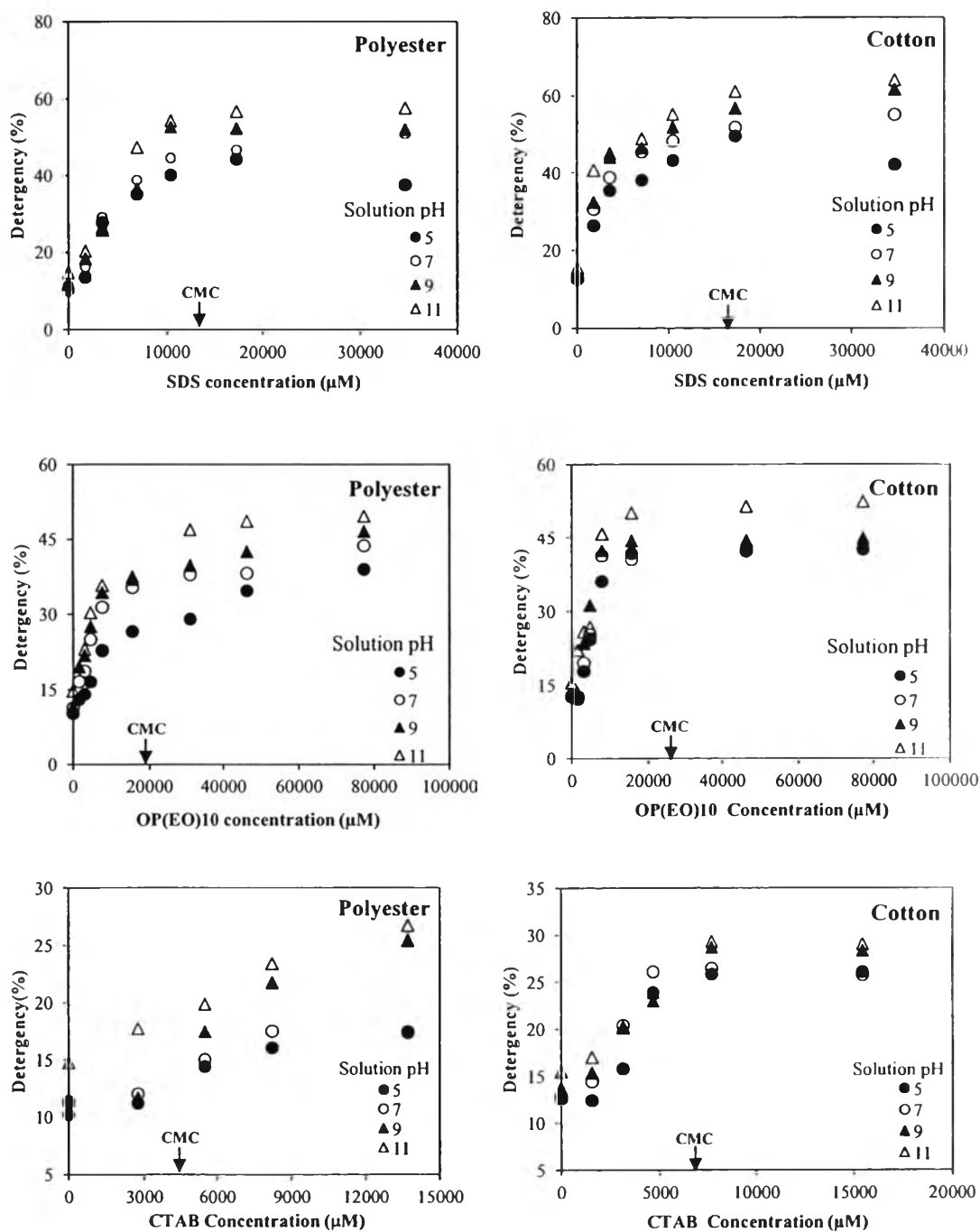


Figure D2 Detergency performance of ferric oxide removal in the presence of SDS, OP(EO)10 and CTAB surfactants at constant temperature of 30°C and pH 5, 7, 9 and 11.

APPENDIX E Redeposition Experiments

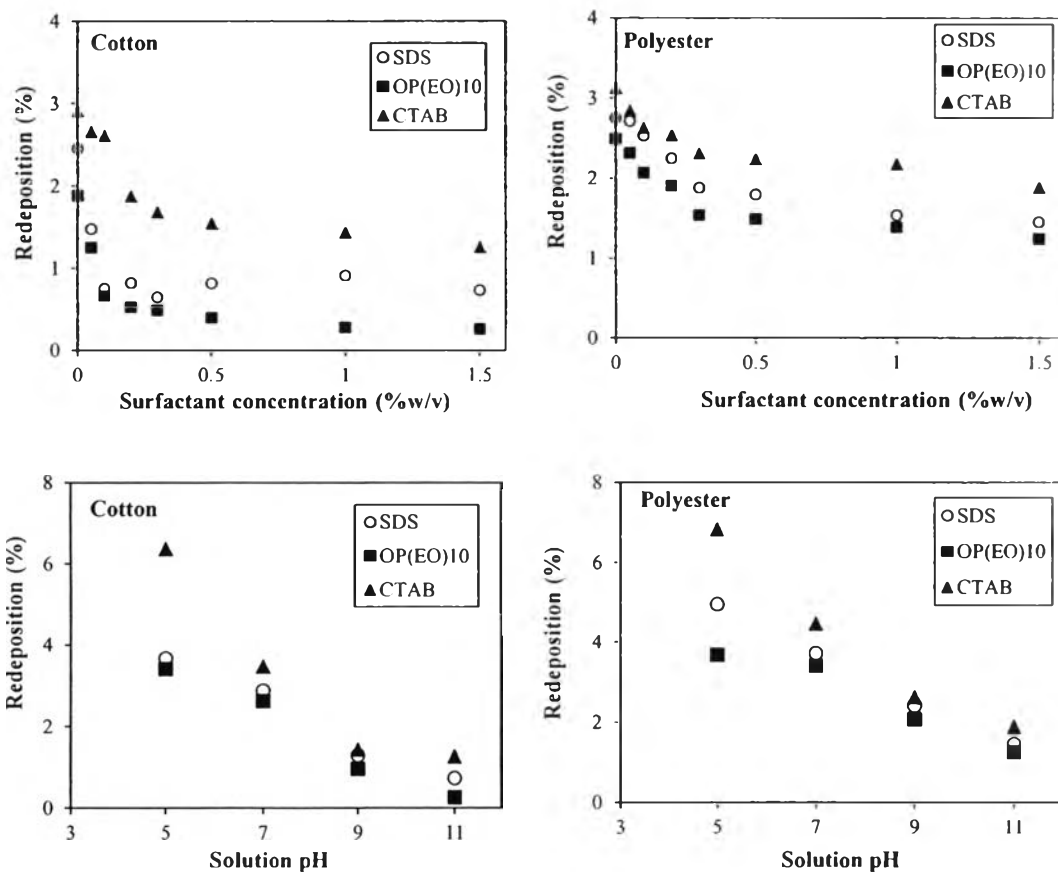


Figure E1 Effect of surfactant concentrations and solution pH on redeposition (%) of detached carbon black on (a) cotton and (b) polyester fabric.

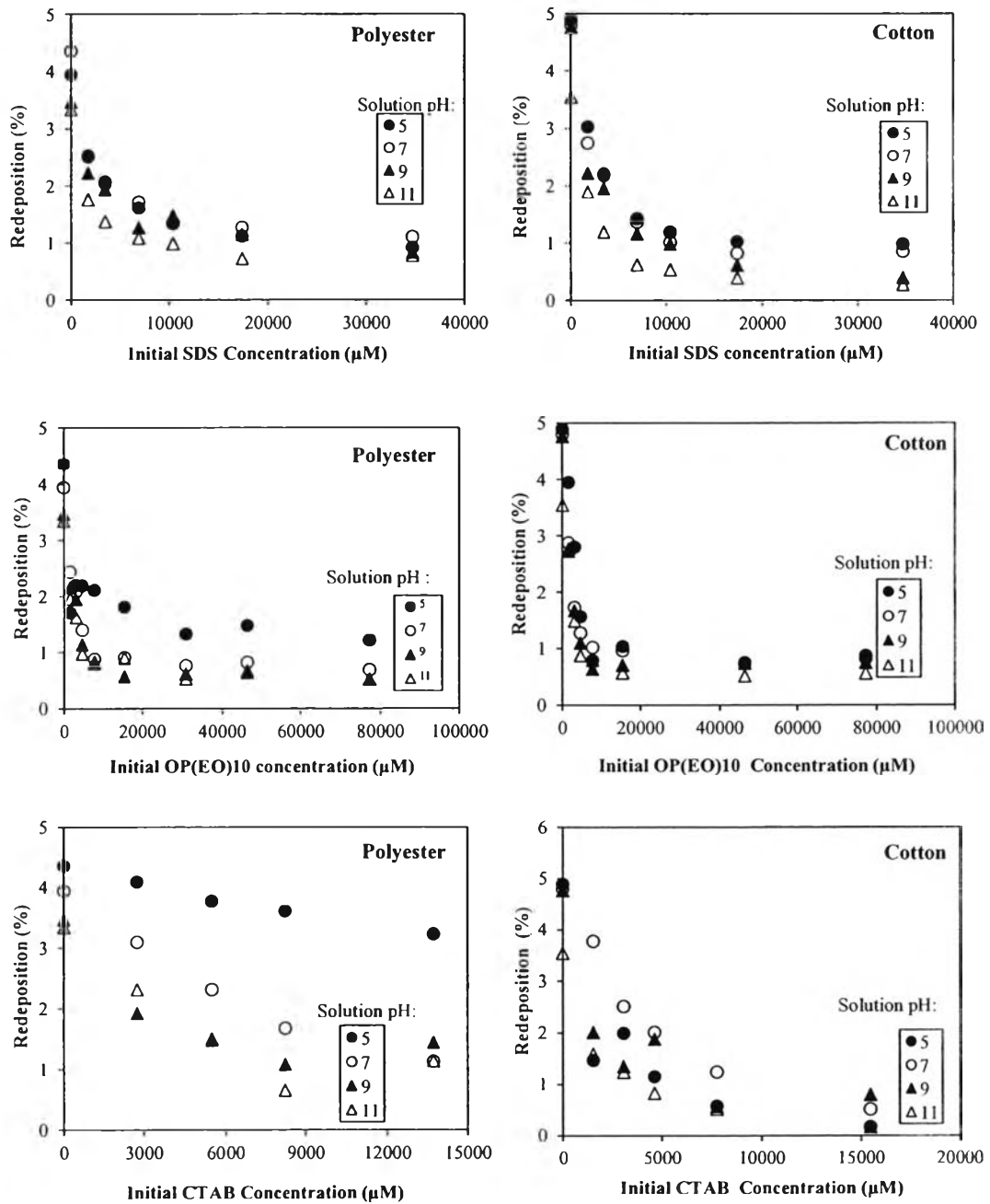


Figure E2 Soil redeposition (%) of ferric oxide in the presence of SDS, OP(EO)10 and CTAB surfactants at constant temperature of 30°C and pH 5, 7, 9 and 11.

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Publications:

1. **Rojvoranun, S.**, Chadavipoo, C., Pengjun, W., Chavadej, S., Scamehorn, J.F., and Sabatini, D.A. Mechanistic Studies of Particulate Soil Detergency: I: Hydrophobic Soil Removal. Journal of Surfactant and Detergent (accepted Nov 2011)
2. **Rojvoranun, S.**, Chavadej, S., Scamehorn, J.F., and Sabatini, D.A. Mechanistic Studies of Particulate Soil Detergency: II: Hydrophilic Soil Removal. Journal of Surfactant and Detergent (submitted)
3. **Rojvoranun, S.**, Chavadej, S., Scamehorn, J.F., and Sabatini, D.A. Mechanistic Studies of Particulate Soil Detergency: III: Performance of Methyl Ester Sulfonate (MES). Journal of Surfactant and Detergent (to be submitted)
4. Thiengchanya, O., **Rojvoranun, S.**, Chavadej, S., Scamehorn, J.F., and Sabatini, D.A. Detergency of Mixed Soil by using Mixed Surfactants. (in preparation)

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1. **Rojvoranun, S.**, Chavadej, S., Scamehorn, J.F., and Sabatini, D.A. (2009, October 11-14). Particulate Soil Detergency for Hydrophilic Particle Removal: Effects of Surfactant and Fabric Types. Proceedings of the 3rd Asian Conference on Colloid and Interface Science (ACCIS 2009), Jeju Island, Korea.



2. **Rojvoranun, S., Chavadej, S., Scamehorn, J.F., and Sabatini, D.A.** (2011, Nov 23-26). The Relation of Dispersion Stability and Particulate Soil Removal in Laundry Detergency. Proceedings of the 4th Asian Conference on Colloid and Interface Science (ACCIS 2011), Tainan, Taiwan.

Presentations:

1. **Rojvoranun, S., Chavadej, S., Scamehorn, J.F., and Sabatini, D.A.** (2010) Performance and Mechanism of Hydrophilic Particle Removal in Laundry Detergency. 101st AOCS Annual Meeting, May 16-19, Phoenix, Arizona, USA (Oral Presentation)
2. Scamehorn, J.F., **Rojvoranun, S., Chavadej, S., and Sabatini, D.A.** (2010) Hydrophobic Particulate Soil Removal in Laundry Detergency. 101st AOCS Annual Meeting, May 16-19, Phoenix, Arizona, USA (Oral Presentation)
3. **Rojvoranun, S., Chavadej, S., Scamehorn, J.F., and Sabatini, D.A.** (2011) Mechanism of Hydrophilic and Hydrophobic Particle Removal in Laundry Detergency. 102nd AOCS Annual Meeting, May 1-4, 2011, Cincinnati, Ohio, USA (Oral Presentation)
4. Scamehorn, J.F., **Rojvoranun, S., Chavadej, S., and Sabatini, D.A.** (2011) Particulate Soil Removal in Laundry Detergency. The 8th World Surfactant Congress and Business Convention, June 6-8, 2011, Austria Center Vienna, Austria (Oral Presentation)
5. **Rojvoranun, S., Chavadej, S., Scamehorn, J.F., and Sabatini, D.A.** (2011) The Relation of Dispersion Stability and Particulate Soil Removal in Laundry Detergency. The 4th Asian Conference on Colloid and Interface Science (ACCIS 2011), Nov 23-26 2011, National Cheng Kung University, Tainan, Taiwan (Oral Presentation)