Electronic Supplementary Material (ESI) for RSC Advances.

Evidence of Microscopic Correlation between Biofilm Kinetics and Divalent Cation for Enhanced Wastewater Treatment Efficiency

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Supporting Information

S-1: Physico-chemical and microbiological analysis of domestic wastewater at various concentrations of added calcium.

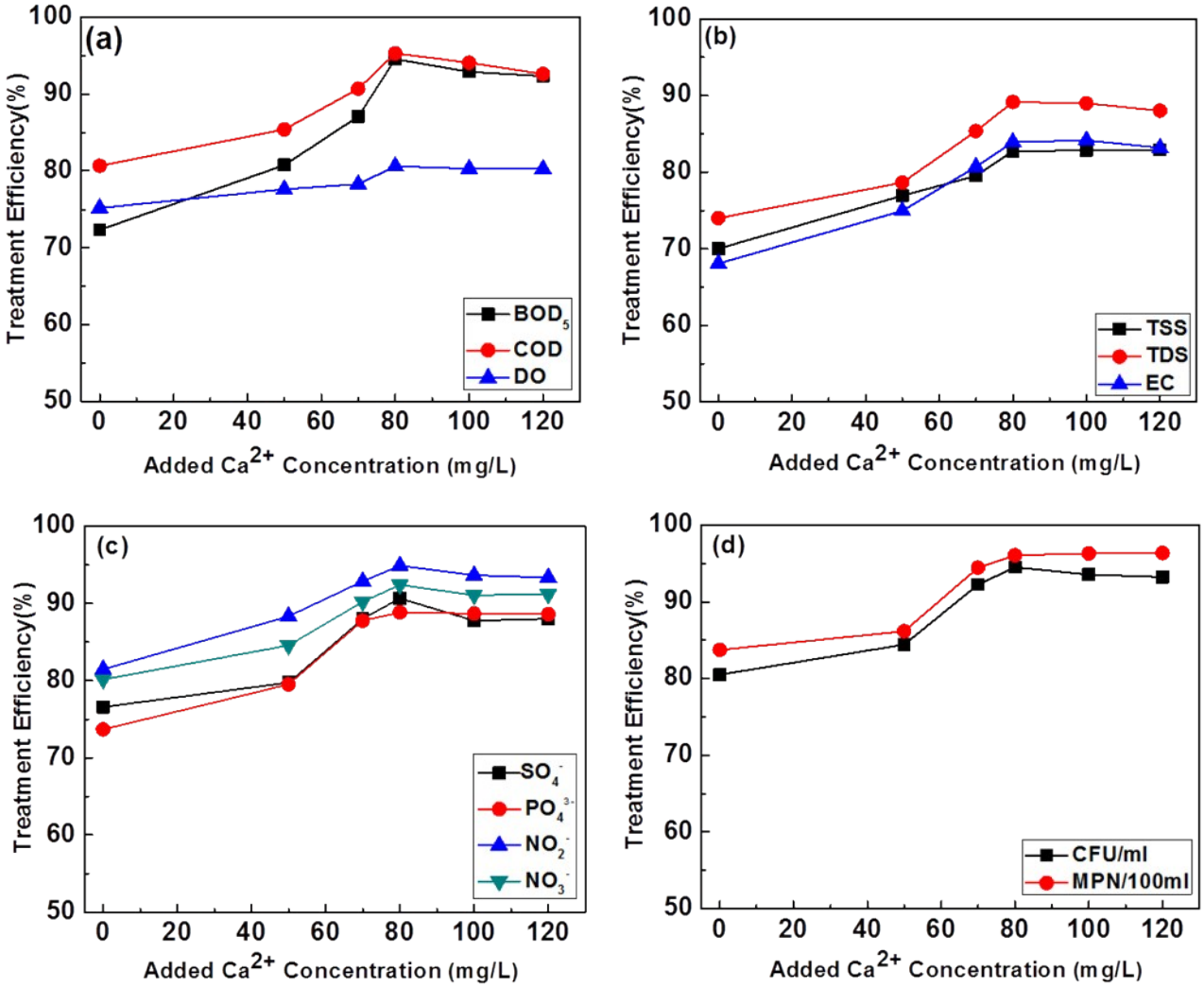

Figure S1: Comparative variation in physico-chemical and microbiological analysis of domestic wastewater at various concentrations of added calcium through HCW planted with *T. portulacastrum* at 20 days HRT.

To explore the optimized calcium concentrations for superior treatment efficiency of CW, the concentration was varied from 50-120 mg/L and the results are shown in figure S1. It is quite clear from the above figure that the treatment efficiency (%) in terms of contaminant removal gradually increases by increasing calcium content and it achieves a saturation or maximum at 80 mg/L. For higher calcium concentrations, no significant or obvious differences in

percentage reduction were observed. The enhanced biomass accumulation and biofilm formation process at 80 mg/L calcium carbonate concentration resulted in improved effluent quality. However, the further increment in Ca^{2+} concentration may cause inhibitory effects on granulation and the specific activity of granules decreased by increasing calcium concentration in the feed. For high calcium concentrations, a large amount of minerals may deposit within the granules initiate precipitation of calcium carbonate. This process may significant decrease the water content in granules and the toxicity of high concentrated calcium accumulated inside granules which restricts the bacterial specific activity. As a result of this, no obvious improvement in effluent quality was observed at high calcium concentrations (100mg/L and 120 mg/L).