SPEECH INFORMATION (For Conference Program Book)	
Topic	Co-culturing *Chlorella sorokiniana* SU-1 and *Shewanella decolorationis* NTOU1 to Enhance Photosynthetic Bio-Anode Electron Transfer
Abstract	Given the selection of *Chlorella sorokiniana* SU-1 and *Shewanella decolorationis* NTOU1, sole culturing bacteria and co-culturing algae and bacteria were separately tested on the electrochemical-cell anodes, feeding high concentrations of glucose and its metabolites (such as lactate and acetate). The results revealed that with only *S. decolorationis* NTOU1 inoculated, the highest current output under glucose-supplemented conditions reached 3.91 mA. Upon coculturing with microalgae, both the glucose and acetate degradation rates, and the current output significantly increased. In the glucose-fed experiment, after inoculating *C. sorokiniana* SU-1, the current sharply increased to 2.6 mA within 10 h. Even after a glucose depletion at 42 h, the current continued to rise to 6.35 mA. In the acetate-fed group, the current increased from 0.48 to 0.54 mA due to microalgal inclusion. Light source control experiments revealed a positive correlation between current generation and light availability, suggesting that photosynthesis benefits power generation. Cyclic voltammetry analysis under glucose-fed conditions showed that 22 h after *C. sorokiniana* SU-1 inclusion, the O2 reduction current disappeared, indicating a O2-blocking effect provided by the symbiotic biofilms, thereby enhancing the anodic current. In contrast, in the acetate-fed coculture, a strong reduction signal appeared at –0.2 V (vs. Ag/AgCl) after acetate depleted, which gradually weakened over time. Without any organic substrates, the same signal was observed when either *C. sorokiniana* SU-1 alone or both microorganisms were inoculated. Further experiments indicated that this substance is an irreversible reductant, not an O2 or photosensitive compound, and may react with glucose or be consumed by microbes acquiring additional electron donors to enhance anodic reactions. The fluorescence and scanning-electron microscopy images revealed that *Shewanella* and *Chlorella* tend to aggregate and stack on the carbon felt fibers. *Shewanella* was observed to adhere to the surface of Chlorella, indicating their co-growth in the form of a structured biofilm.
Keywords: *Chlorella sorokiniana* SU-1、*Shewanella decolorationis* NTOU1、Electrochemistry