

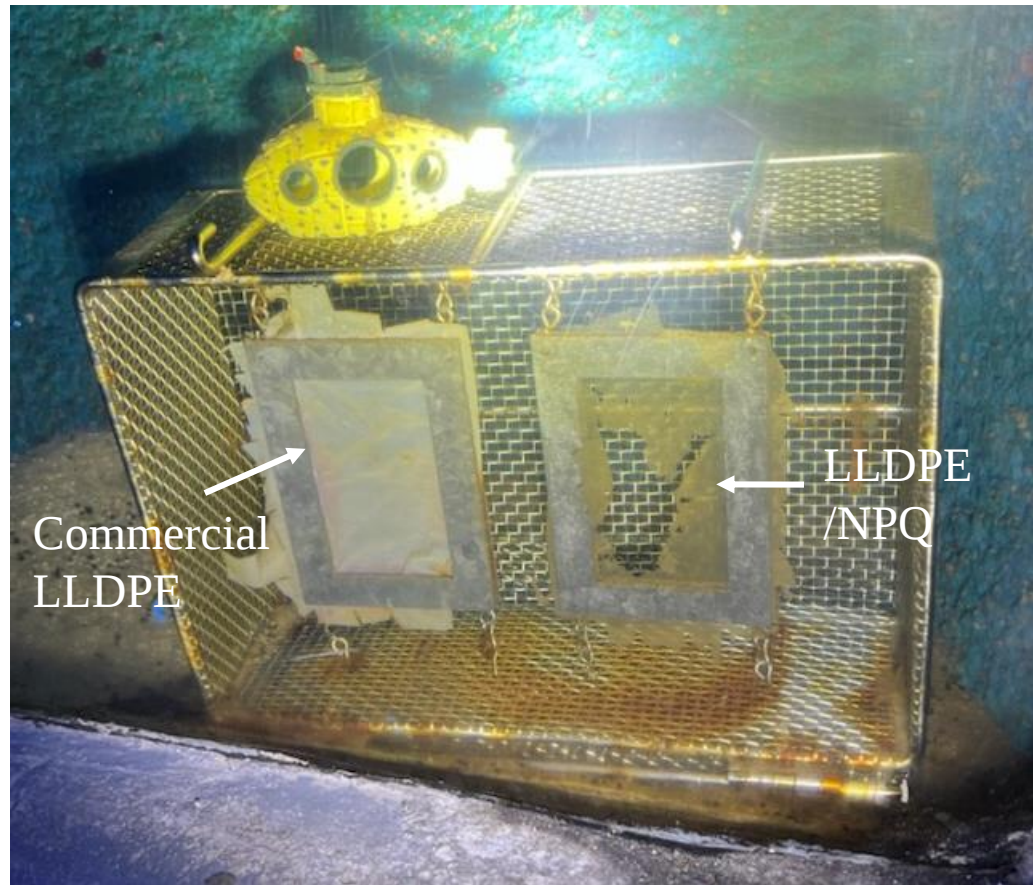


Figure S1 Bio-blister degradation test of commercial LLDPE and LLDPE/NPQ films in Shark tank at East Idaho Aquarium for 12 months.

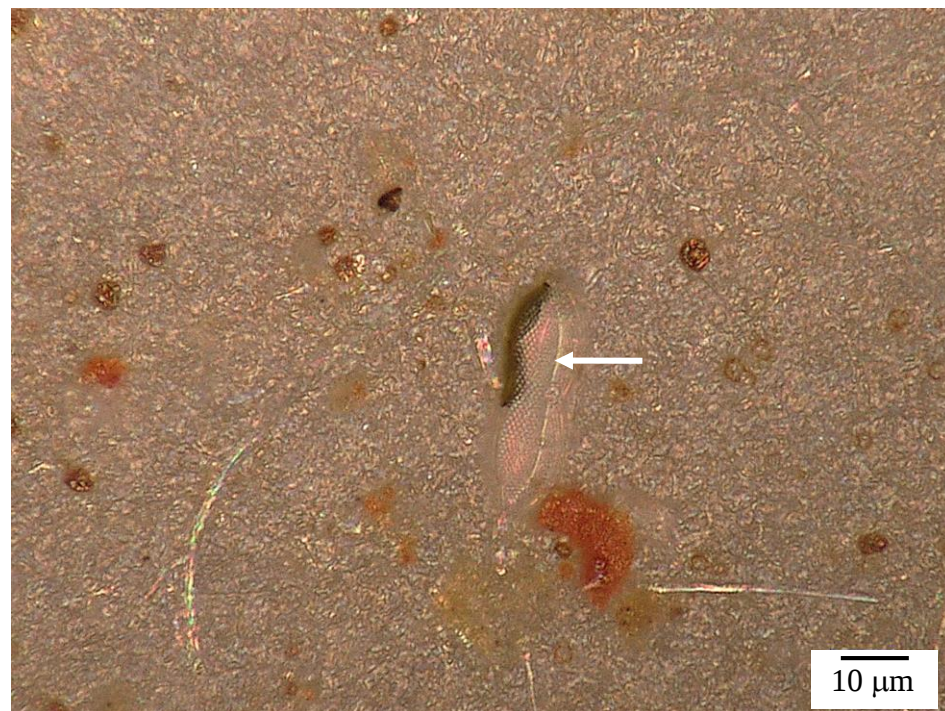
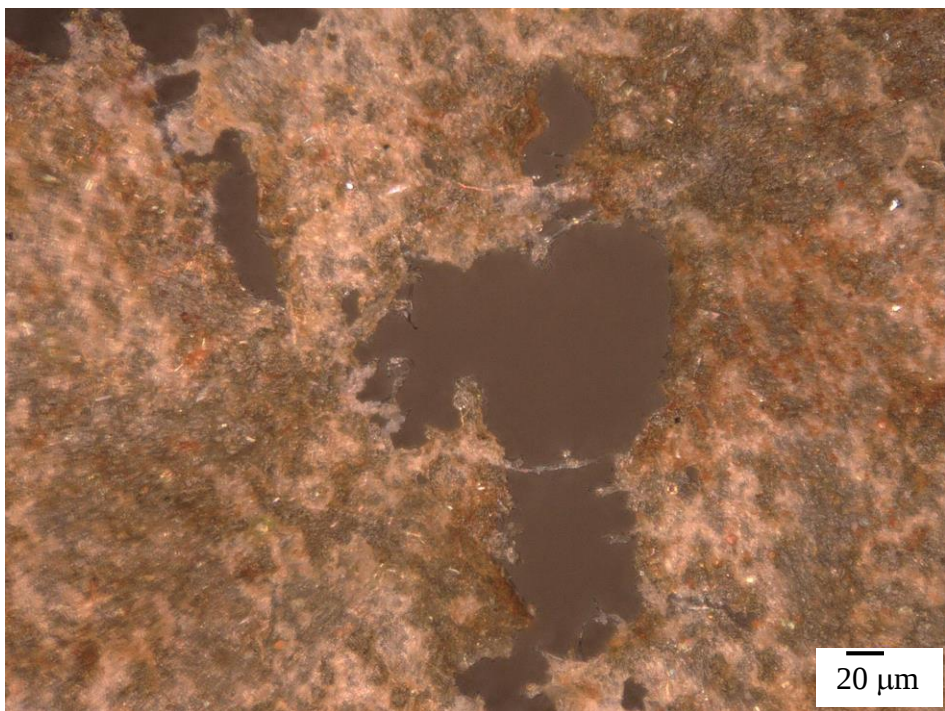
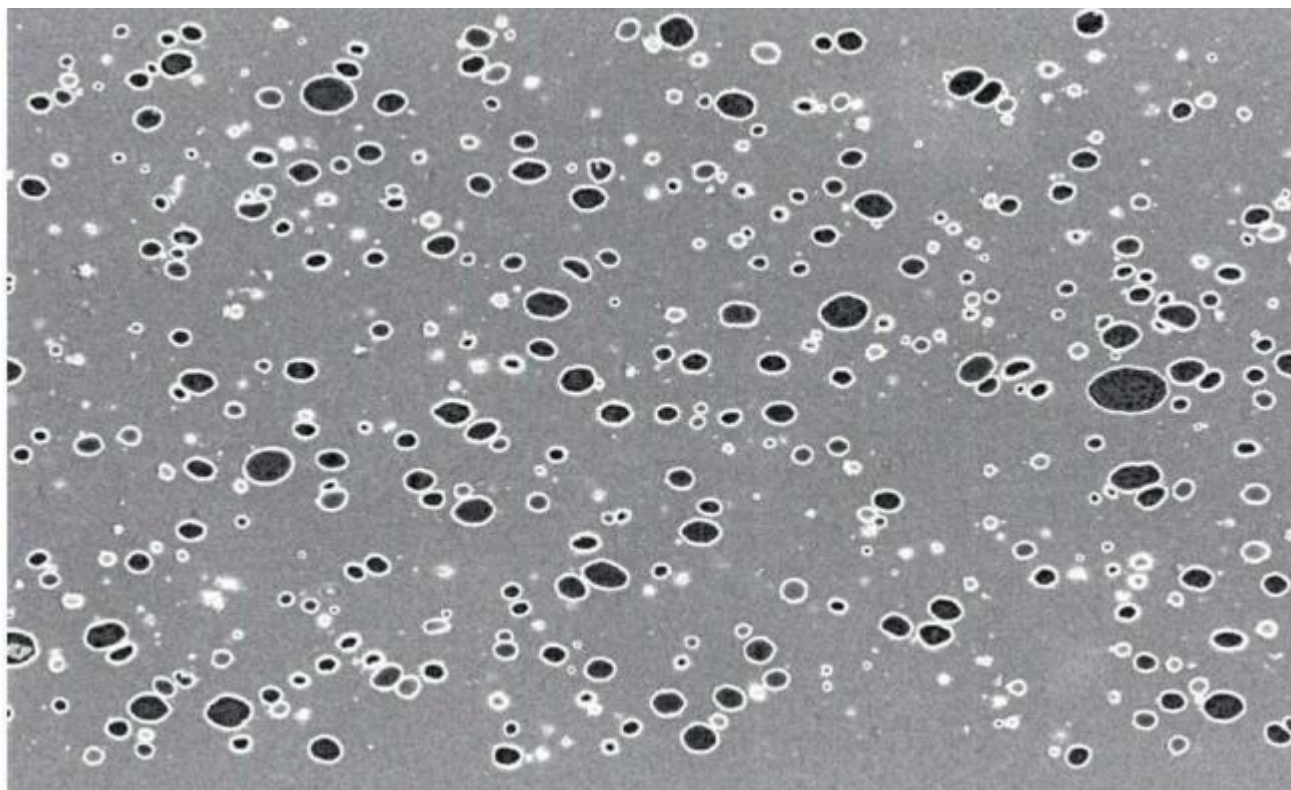


Figure S2 Microphotographs of LLDPE/NPQ films after bio-blister degradation test in shark tank at East Idaho Aquarium for 6 months.



3 μm

Figure S3 SEM image of LLDPE/NPQ control sample small piece cut with a diamond knife.

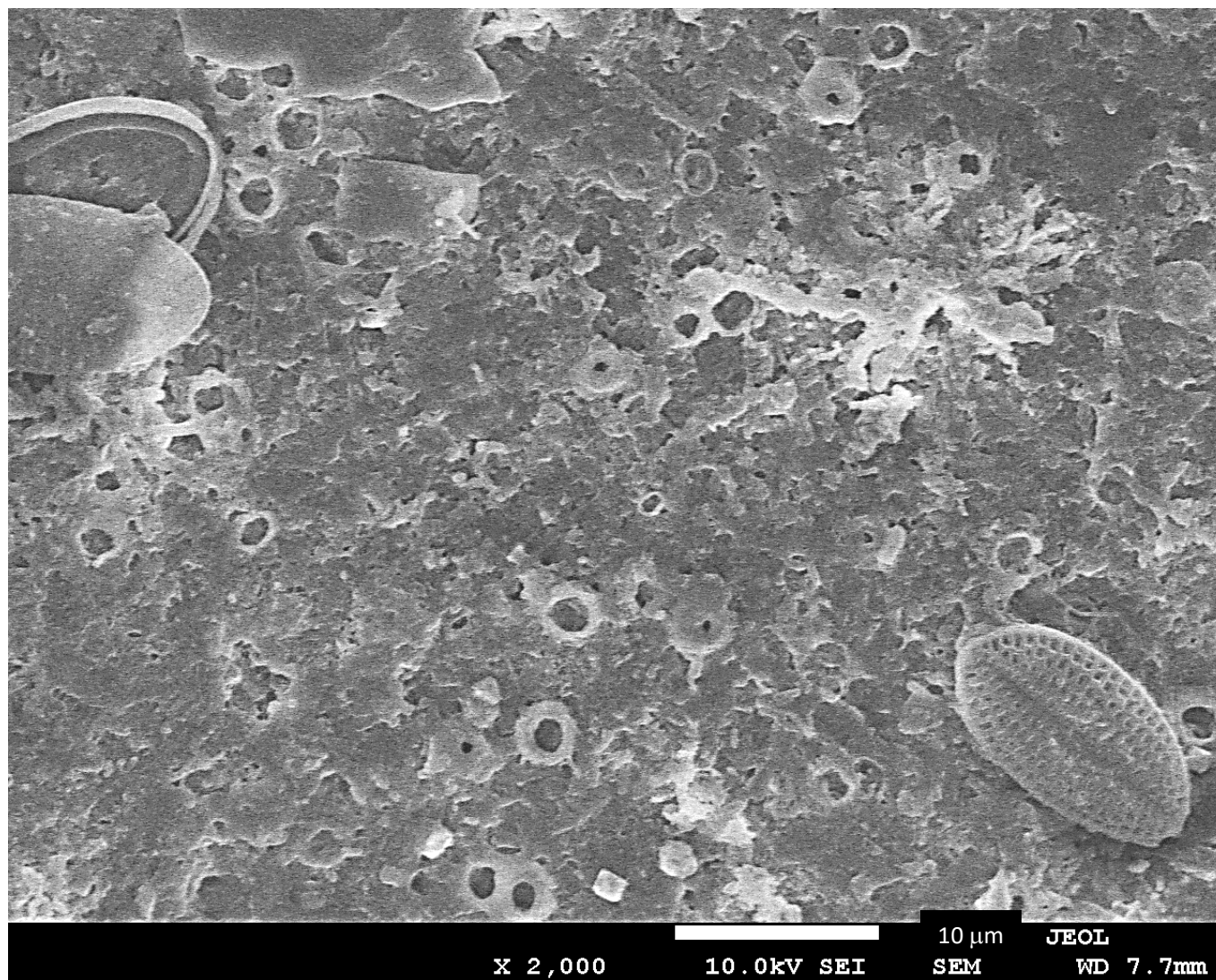


Figure S4 Magnified SEM image of LLDPE/NPQ sample after 12 months bio-blister degradation test in shark tank at East Idaho Aquarium.

Sample8_EDS-001

	O (mol%)	Au (mol%)	C (mol%)	Si (mol%)
001	41.16	13.21	25.61	20.03
002	44.73	14.48	19.06	21.72
003	36.09	12.20	35.44	16.28
004	38.38	10.63	36.38	14.60

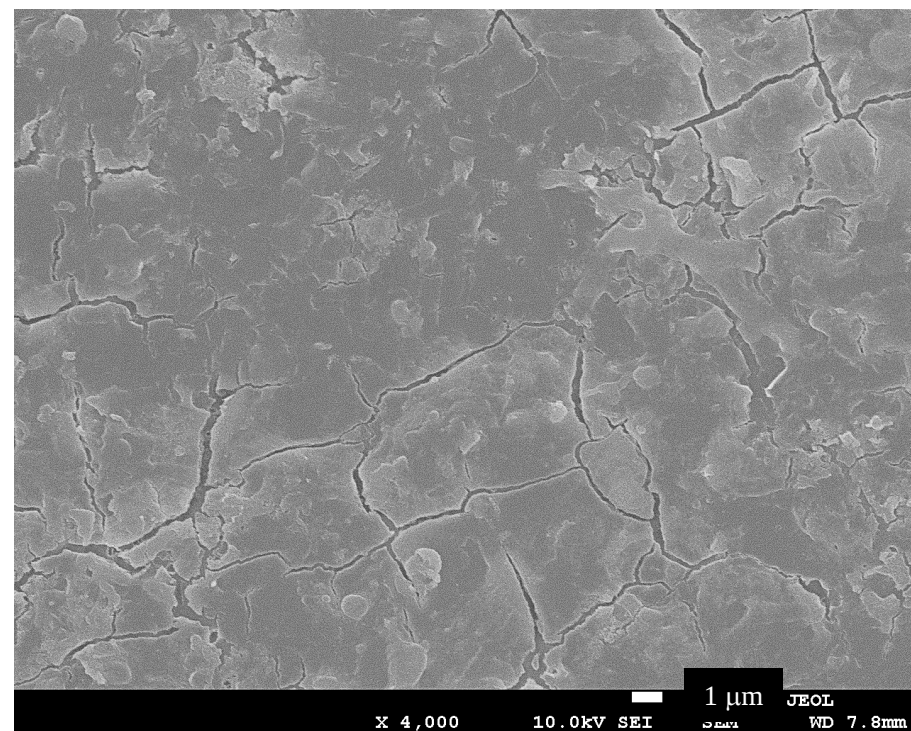
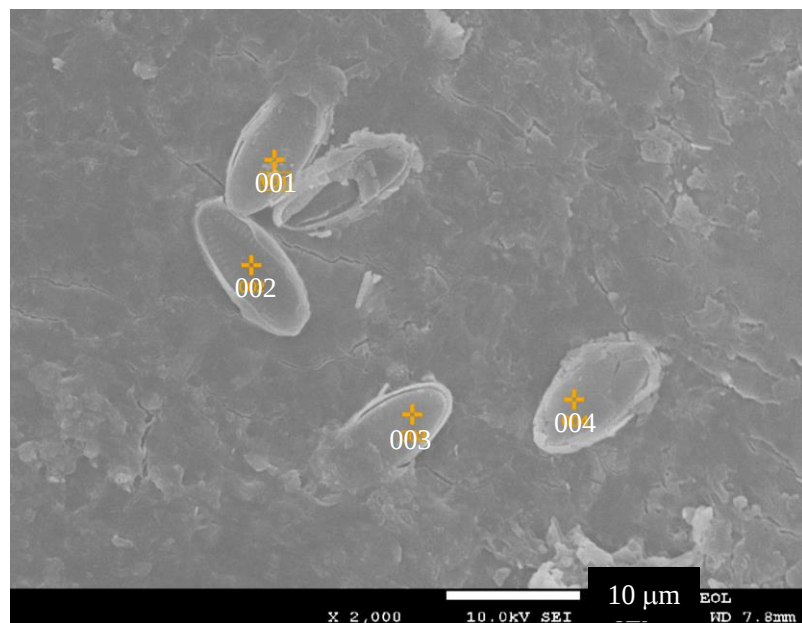


Figure S5 EDX data and SEM images of LLDPE/NPQ sample after 12 months bio-blister degradation test in fresh water (Amazon River Giants) tank at East Idaho Aquarium.

Tank condition information

Tank name	Temp (°C)	Salinity (Specific gravity)	pH
Shark Tank	25.7	1.019	7.9
Amazon(River Giants)	22.7	1.000	7.3

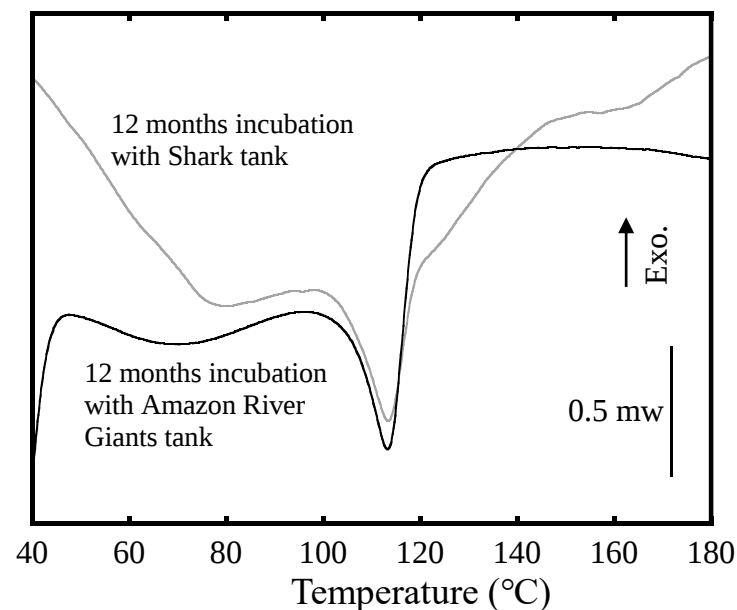
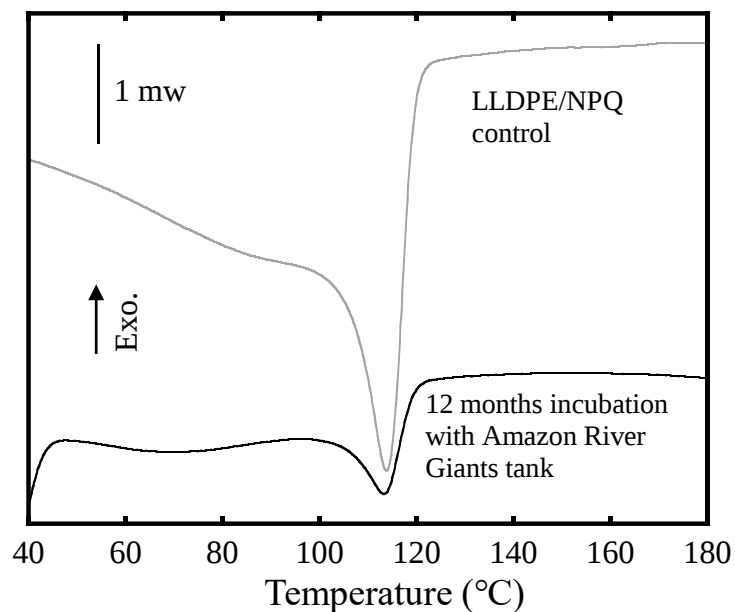


Figure S6 Shark and River Giants tank condition information and comparisons of DSC curves among LLDPE/NPQ samples.