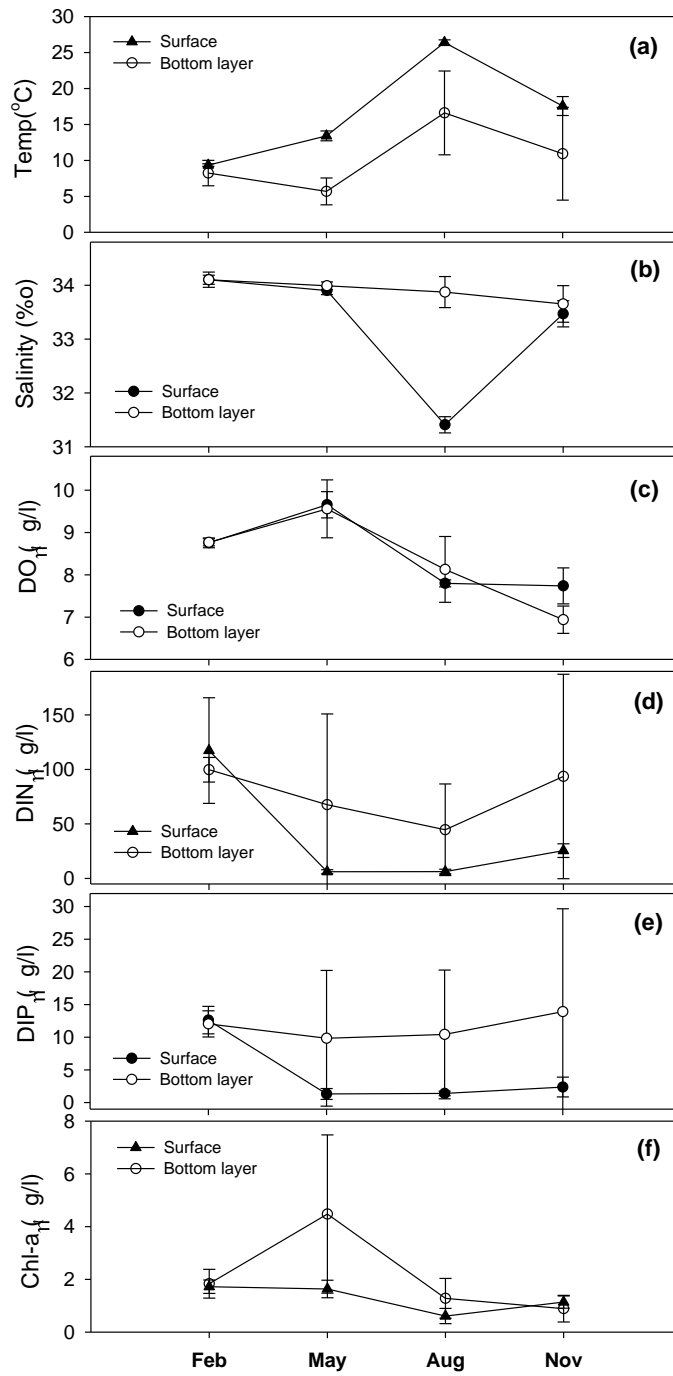


1 Supplement Materials



2

3 **Fig. S1.** Physical and chemical properties of seasonal seawater in the East Sea. (a) Temperature, (b) Salinity, (c)
 4 Dissolved oxygen, (d) Dissolved inorganic nitrogen, (e) Dissolved inorganic phosphorous, and (f) chlorophyll-a.

5

6 **Table S1.** Relative Abundance of Dominant Diatoms Observed in Okgye Pilot Plant

Genera	Feb	Apr	May	Jun	Jul	Aug	Sep	Oct
Bacillariophyceae								
Centric diatom								
<i>Actinocyclus</i> spp.		P			P	P	P	P
<i>Bacteriastrum</i> spp.		P			P			
<i>Chaetoceros</i> spp.	C	P	P	P	P	P	P	P
<i>Corethron</i> spp.	C							P
<i>Coscinodiscus</i> spp.		P	P			P		P
<i>Cyclotella</i> spp.					P	C	P	C
<i>Dactyliosolen</i> spp.					P		P	
<i>Ditylum</i> spp.		P			P		P	P
<i>Ethmodiscus</i> spp.						P	P	
<i>Eucampia</i> spp.		P						
<i>Guinardia</i> spp.	C	P	P	A	A	P	C	P
<i>Hemiaulus</i> spp.					P	P	P	P
<i>Lauderia</i> spp.					P			P
<i>Leptocylindrus</i> spp.		C	A		P	P	P	
<i>Melosira</i> spp.								P
<i>Odontella longicrusis</i>								
<i>Paralia</i> spp.					P	P	P	
<i>Proboscia</i> spp.			P			P	P	
<i>Podosira</i> spp.		P						
<i>Pseudosolenia</i> spp.					P		P	
<i>Rhizosolenia</i> spp.					P	P	P	P
<i>Roperia</i> spp.					P		P	
<i>Skeletonema</i> spp.					P			
<i>Stephanopyxis</i> spp..					P	P		P

<i>Thalassiosira</i> spp.	C	P	P		P	P	P	P
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Pennate diatom

<i>Achnanthes</i> spp.						P		
<i>Asterionellopsis</i> spp.						P		P
<i>Cocconeis</i> spp.						P	P	P
<i>Cylindrotheca</i> spp.				P	P	P	P	P
<i>Cymbella</i> spp.							P	
<i>Diatoma</i> spp.								P
<i>Diploneis</i> spp.							P	P
<i>Fragilariopsis</i> spp.							P	P
<i>Licmophora</i> spp.				P			P	
<i>Meuniera</i> spp.								P
<i>Navicula</i> spp.					P		P	P
<i>Nitzschia</i> spp.	C	P	P	P	P	P	P	P
<i>Pinnularia</i> spp.					P	P	P	P
<i>Pleurosigma</i> spp.							P	
<i>Pseudo-nitzschia</i> spp.							P	
<i>Synedra</i> spp.					P	P	P	P
<i>Thalassionema</i> spp.		P	P		P	P	P	P

Dinophyceae

<i>Amphidinium</i> spp.								P
<i>Catodinium</i> spp.					P	P		
<i>Gymnodinium</i> spp.					P	P	P	P
<i>Gyrodinium</i> spp.					P	P	P	P
<i>Alexandrium</i> spp.								P
<i>Ceratium</i> spp.					P	P		P
<i>Dinophysis</i> spp..						P	P	P
<i>Diplopsalopsis</i> spp.								

<i>Gonyaulax</i> spp.			P	P	P	P
<i>Helgolandinium</i> spp.				P		
<i>Oxytoxum</i> spp.						P
<i>Prorocentrum</i> spp.			P	P	P	P
<i>Protoperdinium</i> spp.	P	P	P	P	P	P
<i>Pyrophacus</i> spp.						
<i>Scrippsella</i> spp.			P	P		P
<i>Thin thecate</i>				P		
<hr/>						
Dictyochoephyceae						
<i>Dictyochoa</i> spp.	A	P			P	P
<i>Distephanus</i> spp.					P	P
<i>Unidentified</i>						P

7 Note: (A) abundant (50-100%), (C) common (25-50%), (p) Present (<25%)

8 **Table S2.** List of Phytoplankton Species Recorded from the Seawater Near Pilot Plant and Biofilm of
 9 Lithium Adsorbents

Bacillariophyceae			
Centric diatom		seawater	adsorbents
<i>Actinocyclus ehrenbergii</i>		+	
<i>Actinocyclus sp.</i>		+	+
<i>Actinoptychus sp.</i>		+	
<i>Bacteriastrum delicatum</i>		+	
<i>Bacteriastrum comosum</i>		+	
<i>Bacteriastrum sp.</i>		+	
<i>Chaetoceros atlanticus</i>		+	
<i>Chaetoceros brevis</i>		+	
<i>Chaetoceros compressus</i>		+	
<i>Chaetoceros danicus</i>		+	
<i>Chaetoceros debilis</i>		+	
<i>Chaetoceros decipiens</i>		+	+
<i>Chaetoceros denticulatum</i>			+
<i>Chaetoceros diaderma</i>		+	+
<i>Chaetoceros didymus var. angelica</i>		+	
<i>Chaetoceros didymus</i>		+	
<i>Chaetoceros lorenzianus</i>		+	
<i>Chaetoceros messanensis</i>		+	
<i>Chaetoceros rostratus</i>		+	
<i>Chaetoceros socialis</i>		+	
<i>Chaetoceros sp.</i>		+	
<i>Corethron hystrix</i>		+	
<i>Corethron sp.</i>		+	
<i>Coscinodiscus nitidus</i>		+	
<i>Coscinodiscus sp.</i>		+	+

<i>Dactyliosolen fragilissimus</i>	+	
<i>Dactyliosolen phuketensis</i>	+	
<i>Ditylum brightwellii</i>	+	
<i>Ethmodiscus gigas</i>	+	+
<i>Eucampia zodiacus</i>	+	+
<i>Guinardia cylindrus</i>	+	
<i>Guinardia delicatula</i>		+
<i>Guinardia flacida</i>	+	
<i>Guinardia striata</i>	+	
<i>Guinardia sp.</i>	+	+
<i>Hemiaulus membranaceus</i>	+	
<i>Hemiaulus hauckii</i>	+	
<i>Lauderia borealis</i>	+	+
<i>Leptocylindrus danicus</i>	+	+
<i>Leptocylindrus minimus</i>	+	
<i>Melosira nummuloides</i>	+	
<i>Odontella longicrusis</i>		+
<i>Paralia sulcata</i>	+	+
<i>Podosira stelliger</i>	+	+
<i>Proboscia alata</i>	+	
<i>Pseudosolenia calcar-avis</i>	+	
<i>Rhizosolenia setigera</i>	+	
<i>Rhizosolenia simplex</i>	+	
<i>Rhizosolenia styliformis</i>	+	
<i>Rhizosolenia sp.</i>	+	
<i>Roperia tessellata</i>	+	
<i>Skeletonema costatum</i>	+	+
<i>Stephanopyxis sp.</i>	+	
<i>Thalassiosira allenii</i>	+	

<i>Thalassiosira eccentrica</i>	+	
<i>Thalassiosira gravida</i>	+	
<i>Thalassiosira hyalina</i>	+	
<i>Thalassiosira nordenskieoldii</i>	+	
<i>Thalassiosira rotula</i>	+	
<i>Thalassiosira</i> sp.	+	+
<hr/>		
Pennate diatom		
<i>Achnanthes exigua</i>		+
<i>Achnanthes</i> sp.	+	+
<i>Asterionellopsis glacialis</i>	+	
<i>Asterionellopsis kariana</i>		+
<i>Bacillaria paxillifer</i>		+
<i>Cocconeis</i> sp.	+	+
<i>Cylindrotheca closterium</i>	+	+
<i>Diatoma elongatum</i>	+	+
<i>Diploneis interrupta</i>	+	+
<i>Diploneis</i> sp.	+	+
<i>Fragilariopsis</i> sp.	+	
<i>Fragilaria islandica</i>	+	
<i>Fragilaria virescence</i> var. <i>elliptica</i>	+	
<i>Licmophora abbreviata</i>		+
<i>Licmophora grandis</i>		+
<i>Licmophora paradoxa</i>		+
<i>Licmophora</i> sp.	+	+
<i>Mastogloia</i> sp.		+
<i>Meuniera membranacea</i>	+	+
<i>Navicula</i> sp.	+	+
<i>Nitzschia closterium</i>	+	

<i>Nitzschia palea</i>	+	+
<i>Nitzschia seriata</i>	+	
<i>Nitzschia socialis</i>	+	+
<i>Nitzschia</i> sp.	+	+
<i>Pinnularia viridis</i>	+	+
<i>Pinnularia</i> sp.	+	+
<i>Pleurosigma angulatum</i>		+
<i>Pleurosigma decorum</i>		+
<i>Pseudo-nitzschia delicatissima</i>		+
<i>Pseudo-nitzschia</i> sp.		+
<i>Synedra acus</i>	+	+
<i>Synedra acus</i> var. <i>angustissima</i>	+	+
<i>Synedra ulna</i>		+
<i>Synedra</i> sp.	+	+
<i>Thalassionema frauenfeldii</i>	+	+
<i>Thalassionema nitzschioides</i>	+	+
<i>Thalassionema nitzschioides</i> var. <i>lanceolata</i>	+	

Dinophyceae

<i>Amphidinium</i> sp.	+	+
<i>Catodinium glaucum</i>	+	
<i>Gymnodinium bogoriense</i>	+	
<i>Gymnodinium helveticum</i>	+	
<i>Gymnodinium rotundatum</i>	+	
<i>Gymnodinium viride</i>	+	
<i>Gymnodinium A</i> sp.	+	
<i>Gymnodinium</i> sp.	+	+
<i>Gyrodinium fusiforme</i>	+	
<i>Gyrodinium</i> sp.	+	

<i>Alexandrium</i> sp.	+	
<i>Ceratium furca</i>	+	
<i>Ceratium lineatum</i>	+	
<i>Ceratium massiliense</i>	+	
<i>Dinophysis</i> sp.		+
<i>Dinophysis forthii</i>	+	
<i>Dinophysis rapa</i>	+	
<i>Gonyaulax</i> sp.	+	
<i>Oxytoxum</i> sp.	+	
<i>Prorocentrum</i> sp.	+	+
<i>Prorocentrum balticum</i>	+	
<i>Prorocentrum compressum</i>	+	
<i>Prorocentrum lima</i>	+	
<i>Prorocentrum micans</i>	+	+
<i>Prorocentrum nanum</i>	+	
<i>Prorocentrum rostratum</i>	+	
<i>Prorocentrum triestinum</i>	+	
<i>Protoperidinium divergence</i>	+	
<i>Protoperidinium minutum</i>	+	+
<i>Protoperidinium parvum</i>	+	
<i>Protoperidinium pellucidum</i>	+	
<i>Protoperidinium pyriforme</i>	+	+
<i>Protoperidinium steinii</i>	+	
<i>Protoperidinium</i> sp.	+	+
<i>Scrippsella trochoideum</i>	+	
<i>Scrippsella</i> sp.	+	

Dictyochophyceae

<i>Dictyocha crux</i>	+	+
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<i>Dictyocha fibula</i>	+	
<i>Dictyocha speculum</i>	+	+
<i>Dictyocha sp.</i>	+	
<i>Distephanus speculum</i>	+	+
