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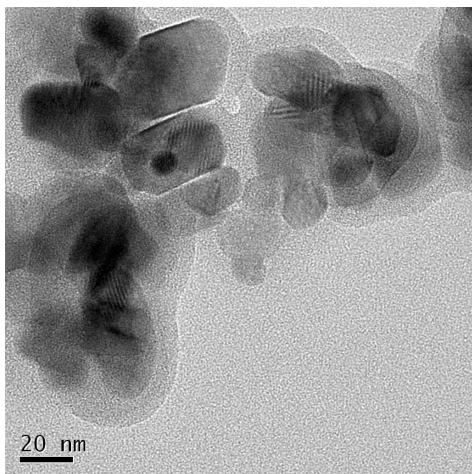
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5 **Anions Influence the Extraction of Rutile Nanoparticles**

6 **from Synthetic and Lake Water**

7 **Supplementary Information**



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Figure S1 Transmission electron micrograph of rutile NPs

Table S1. Parameters in the calculation of the DLVO energy barriers

Parameter	Description	Value	Unit
A	Hamaker constant	9.10×10^{-20}	J
C	Electrolyte concentration	0.0001–0.1	M
IS	Ionic strength	0.0003–0.3	M
k_B	Boltzmann constant	1.38×10^{-23}	J/K
$k_B T$		4.12×10^{-21}	J
n	Bulk electrolyte number		m^{-3}
	$n = NA \times c \times 10^3$		
NA	Avogadro's number	6.02×10^{23}	mol^{-1}
c	Molar concentration	0.0001–0.1	mol/L
R	radius of a particle	5.00×10^{-8}	m
T	Temperature	298	K
z	Valence of ions	1–3	
ϵ	Permittivity of water	7.08×10^{-10}	F/m
ϵ_0	Dielectric permittivity of a vacuum	8.85×10^{-12}	F/m
ϵ_w	Dielectric constant of water	80	F/m
κ	Deby-Hückel Parameter	$10^8 - 10^6$	m^{-1}
π		3.1416	
ζ	Zeta potential	–50–50	mV
e	Elementary positive charge	1.60×10^{-19}	C

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Table S2 Water parameter of the sampling lake

Parameters		Instrument/methods
pH	7.42	Portable Meter (Qiwei, CN)
DOC (mg/L)	7.68	TOC-L analyzer (Shimadzu., Japan)
Anion concentrations	(mg/L)	
Cl ⁻	67.98	GB/11893-1989
SO ₄ ²⁻ (mg/L)	60.65	GB/11893-1989
PO ₄ ³⁻	0.09	GB/11893-1989
HCO ₃ ⁻	42.01	GB/11893-1989
Cation concentrations	(mg/L)	
K ⁺	4.32	(ICP-AES)
Ca ²⁺	20.17	(ICP-AES)
Mg ²⁺	25.26	(ICP-AES)
Na ⁺	30.22	(ICP-AES)

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