Adsorptive separation helps achieve carbon neutrality

of technology development. We expect that by 2030, the domestic demand for PLA will reach 3.4mt, representing a lactic acid purification resin market of at least Rmb1.6bn. The Company has established excellent cooperation with leading domestic PLA producers such as Jindan Lactic Acid Technology and BBCA Biochemical and is strongly positioned to capitalize on incremental demand in the market. The Company is also expected to take up a sizable market share in the BDO purification market (BDO is an upstream material PBAT, another promising biodegradable plastic). In additio
products are increasingly substituting imported counterparts in the life science segment by delivering environmental friendliness and cost reduction at once.

CCUS technology has vast potential with "adsorptive separation" set to benefit from carbon trading

CCUS technology is the most important means to reduce carbon dioxide emissions. According to a forecast of the Department of Science and Technology for Social Development, Ministry of Science and Technology, reach an annual value of more than Rmb330bn by
s
proprietary Seplite-CT polymeric adsorbent product with a macroreticular pore structure has been exported to Europe and other markets. With the continued promotion and expansion of CCUS applications in China, we expect the Company to play an important role in carbon capture and help China to have a bigger say in the global carbon trading system.

Potential risks

1) Significant price volatility of raw materials; 2) intensified industry competition; 3) progress in various business segments missing expectations.

Investment strategy

With carbon neutrality efforts steadily gaining momentum, domestic and overseas NEV markets rapidly expanding, electronic and nuclear grade resins finding increasing applications, and CCUS technology continuing to spread, the Company has entered a phase of rapid growth across segments. We are

2021E-23E earnings forecasts of Rmb323mn/Rmb448mn/Rmb575mn and EPS forecasts of Rmb1.47/2.04/2.62 and reiterate the 2022E target price of Rmb120 (implying 60x 2022E PE with reference to historical valuations of

Item/Year	2019	2020	2021E	2022E	2023E
Operating revenue (Rmb mn)	1,012	923	1,211	1,539	1,958
Operating revenue (YoY,%)	60.1%	-8.8%	31.2%	27.1%	27.3%
Net profit (Rmb mn)	251	202	323	448	575
Net profit (YoY,%)	75.4%	-19.6%	59.8%	38.8%	28.4%
EPS (Rmb, Basic)	1.14	0.92	1.47	2.04	2.62
Gross margin	49.8%	46.6%	47.4%	48.3%	48.8%
ROE (%)	19.9%	12.2%	15.1%	17.8%	19.2%
BVPS (Rmb)	5.74	7.51	9.73	11.46	13.65
PE (x)	84.4	104.6	65.4	47.2	36.7
PB (x)	16.8	12.8	9.9	8.4	7.0
PS (x)	20.9	22.9	17.5	13.7	10.8
EV/EBITDA (x)	65.9	60.3	49.6	37.3	29.7

Source: Wind, CITICS Research forecast Note: Closing price as of 27 Jan 2022

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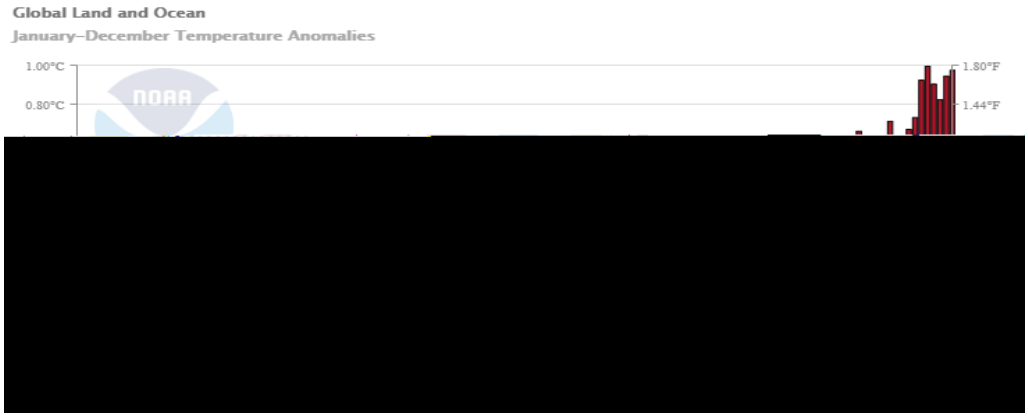
Adsorptive separation is a promising technology for global carbon neutrality

Carbon neutrality is an important goal for the world in the 21st century

The widespread use of fossil fuels contributes to global warming. Although electricity and oil, as the "new energy" during the second industrial revolution, have brought about a global leap in productivity since the mid-nineteenth century, the accumulation of carbon dioxide in the atmosphere from the burning of fossil fuels has also contributed to a gradual increase in global temperatures. According to the US National Oceanic and Atmospheric Administration (NOAA), the global average temperature has increased by 1°C since 1880, which has triggered a variety of climate anomalies such as the melting of the North and South polar ice caps, local climate change, and frequent extreme weather events. If humans do not limit their carbon emissions, it is expected that the global average temperature will continue to rise by 3°C by 2050, which will cause a significant rise in sea level and have a huge negative impact on the human world.

Fig. 1: Global average temperature, 1880-2020



Source: NOAA

Achieving "carbon neutrality" is critical for addressing global warming. In 1992, the *United Nations Framework Convention on Climate Change* (UNFCCC) was signed, kicking off a concerted global effort to address global warming. Following the signing in 1997 of the *Kyoto Protocol* that set the conservative goal of slowing temperature rise by 0.02-0.28 by 2050, the Paris Agreement was signed by 178 countries in 2015 that commits countries to limit the global average temperature rise to well below 2 above pre-industrial levels On 1 Nov 2021, the 26th session of the Conference of the Parties (COP26) to the UNFCCC reached a global climate deal aimed at achieving net zero emissions and limiting global warming to 1.5°C by 2050.

China is committed to achieving domestic "carbon neutrality" by 2060. Since the 18th CPC National Congress, the concept of green development has consistently guided -down policy designs. At the 75th Session of the United Nations General Assembly, President Xi Jinping announced that China would strive to peak CO_2 emissions before 2030 and achieve carbon neutrality before 2060. The carbon peaking and neutrality goals will give a strong impetus to the energy transition and zero carbon emission technology development in China.

Adsorptive separation is expected to become an important means to advance carbon neutrality

Achieving "carbon neutrality" depends on: 1) energy transition from fossil energy to clean energy; **2) energy conservation** to reduce the carbon footprint of human activity; **3) the development of carbon sequestration technology**
emissions," which will give China an edge in the upcoming carbon trading market.

Adsorptive separation technology plays an important role in all of the above scenarios. From the energy supply side, adsorptive separation technology can be used to extract and recover energy metals and produce nuclear grade ultrapure water, which can help promote clean energy rapidly; in terms of the intermediate stage, adsorptive separation technology is expected to help the production of bio-based degradable plastics such as PLA and reduce the carbon footprint of petroleum-based degradable plastics; in the development and research of pollutant treatment and resource recovery, the organic wastewater from petrochemical, dye, pharmaceutical, electronic and metal industries can be used to reduce the carbon footprint of petroleum-based degradable plastics; in the development and research of pollutant treatment and resource utilization, adsorptive separation technology can be used to control the emission of toxic pollutants such as organic wastewater, wastewater polluted by heavy metals, and waste batteries generated by petrochemical, dye, pharmaceutical, electronic, metal and other industries and at the same time to achieve the enrichment, recovery and comprehensive utilization of resources, thus delivering both economic and social benefits. Adsorbent resins can also be used to capture carbon dioxide in exhaust gas and even in the atmosphere, ing adsorptive separation solution provider in China, Sunresin will play an important role in moving towards carbon neutrality.

Adsorbent resins help drive energy transition

Mature “adsorption + membrane” separation processes provide a viable lithium extraction solution

Clean energy is expected to replace fossil energy as the primary energy source in China by 2060. In 2020, fossil energy accounted for 83.6% of total energy consumption in China, and non-fossil energy accounted for 16.4%. Coal, oil and natural gas accounted for 56.7%, 18.9% and 8.0% of total energy consumption, respectively, with a combined fossil energy share of 83.6%. Hydropower, wind power, nuclear power and PV solar power accounted for 9.1%, 3.1%, 2.4% and 1.7%, respectively, with a combined non-fossil energy share of 16.4%. We predict that in the carbon neutral scenario by 2060, clean energy will account for more than 90% of China's energy structure, with PV solar, wind, hydrogen and nuclear power expected to account for 36.5%, 25%, 15.2% and 9%, respectively, and become the primary energy source in China and that green energy storage will also have achieved significant development by then.

Fig. 2: China's energy consumption forecast (100mn tce)

Source: National Bureau of Statistics, CITICS Research forecast

Fig. 3: China's energy consumption structure forecast (%)

Source: National Bureau of Statistics, CITICS Research forecast

Refined products still dominate petroleum energy consumption. At present, gasoline and diesel, which has an increased share in refined oil products, take up an overwhelming majority of refined oil product consumption in China. In other words, transportation sector use accounts for more than 90% of petroleum consumption which

carbon-emitting energy consumption could be replaced with renewable energy, it would carbon emissions by more than 15%, which would be of great significance for achieving carbon peaking by 2030.

Fig. 4: China's monthly crude oil processing volume and breakdown (10,000 t)

Source: NOAA, CITICS Research

Driven by policy, new energy increasingly replaces petrochemical energy. All countries are stepping up efforts on NEVs. In its *New Energy Vehicle Industry Development Plan (2021-2035)*, China aims to increase its NEV penetration rate to 20% in 2025 and 40% in 2030, compared to 20% and 30% for the EU and 50% by 2030 for

levels in 2020. The world has entered a period of rapid explosion in demand for lithium batteries.

Fig. 5: Domestic NEV production (10k vehicles)

Fig. 6: Global lithium battery installed capacity forecast (GWh)

Source: CAAM, CITICS Research forecast

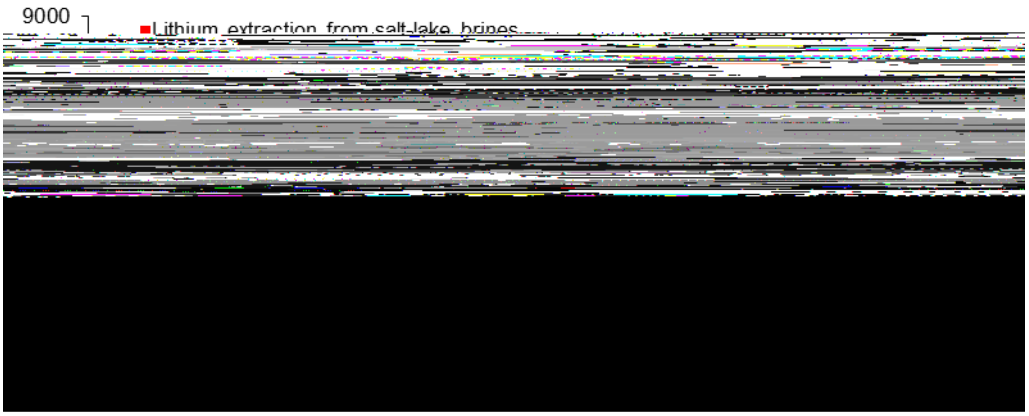
from the former requires energy-intensive and high-pollution processes such as calcination and acid leaching and is much more expensive and carbon-intensive higher than lithium production from brines. According to Roskill's cost analysis, the global cost of lithium extraction from salt lake brines in 2019 was Rmb20,000-40,000/t, and the cost was even below Rmb20,000/t for richly endowed salt lakes, while the cost of lithium extraction from all kinds of lithium-containing ores is generally above Rmb40,000/t.

Table 1: Comparison of environmental friendliness of lithium extraction from brines and ores

	Lithium extraction from brines	Lithium extraction from ores
Production of lithium carbonate	CO_2 emissions: 2.7-3.1t CO_2/t Energy consumption: 30,000-36,000 MJ/t Water consumption: 15.5-32.8 m^3/t	CO_2 emissions: 20.4t CO_2/t Energy consumption: 218,000 MJ/t Water consumption: 77 m3/t
Production of lithium hydroxide	CO_2 emissions: 6.9-7.3t CO_2/t Energy consumption: 76,600-82,900 MJ/t Water consumption: 31-50 m^3/t	CO_2 emissions: 15.7t CO_2/t Energy consumption: 187,200 MJ/t Water consumption: 69 m^3/t

Source: *Resources, Conservation & Recycling* (Ming Xu), CITICS Research

Fig. 9: Cost curve of global lithium compounds (US$/t, LCE)



Source: Roskill, CITICS Research

China's lithium resources are concentrated in low-grade salt lake brines, making extraction more difficult. According to the China Geological Survey, lithium resources in China occur in three forms, including salt-lake brine, spodumene and lepidolite, with salt-lake brine accounting for 81.6%. Qinghai, Tibet and Sichuan are the top three lithium-producing regions in China, with reserves accounting for 43.4%, 31.1% and 10.6%, respectively. However, compared with overseas (where magnesium-lithium ratio is generally below 20), domestic salt lakes are less rich in lithium with magnesium-lithium ratio of more than 40, and the ratio in Chaerhan Salt Lake is as high as 1577.4, making lithium extraction in China much more difficult.

Table 2: Magnesium and lithium content of major global lithium brine deposits

Deposit	Country	Li (%)	Mg (%)	Mg/Li
Uyuni	Bolivia	0.032	0.65	20.3
Atacama	Chile	0.157	0.97	6.4
Dong Taijinaier	China	0.085	2.99	35.2
Xi Taijinaier	China	0.022	1.99	90.5
Chaerhan	China	0.0031	4.89	157.7
Yiliping	China	0.021	1.28	60.9
Zabuye	China	0.08	0.002	0.025
Silver Peak	US	0.016	0.019	1.2

	Adsorption method	Precipitation method	Membrane method	Extraction method
	Jintai Lithium, etc.		HXR Lithium, etc.	
Salt lakes	Chaerhan Salt Lake	Atacama Salt Lake, Olaroz Salt Lake, etc.	Dong Taijinaier, Xi Taijinaier, Yiliping	Da Qaidam Salt Lake, Balun Mahai Lake

Source: "Research and development of lithium brine extraction technology" (LIU Dongfan, SUN Shuying, YU Jianguo), CITICS Research

Lithium brine extraction represents a market of over Rmb10bn in China. We estimate the size of the domestic market of lithium extraction from salt-lake brine from two dimensions:

1) Demand side: Domestic lithium carbonate demand is expected to reach 600kt by 2025, with production line investment expected to reach Rmb10bn.

nearly 200ktpa capacity coming over the long term. Assuming a central tendency of a whole production line investment of Rmb500mn, the domestic lithium brine extraction market size is Rmb10bn.

Table 5: Major lithium brine extraction projects in China

Enterprise	Completed capacity/t	Planned capacity/t	Total long-term capacity/t
Qinghai Salt Lake Potash	3	2	10
Zangge Lithium	1	1	2
Minmetals Salt Lake	1	1	2
CITIC Guoan Lithium	1	2	3
Qinghai Lithium	1	-	1
Qinghai Lithium Resources	1	1	2
HXR Lithium	2	0	2
Jintai Lithium	0.6	0.4	1
Xinghua Lithium	1	0	1
Tibet Mineral Development	0.5	-	0.5
Guoneng Mining	0	1	5
Jinhai Lithium	0	1	1
Total	13.1	9.4	30.5

Source: official announcements and websites, CITICS Research (Guoneng Mining's planned production line is lithium hydroxide)

in the latest cooperation processing service agreement with Guoneng Mining, Sunresin can get both guaranteed income and sales revenue sharing.

Table 6: Modes of cooperation between Sunresin and lithium brine extraction enterprises

	Jintai Lithium	Zangge Mining	Minmetals Salt Lake	Qinghai Salt Lake Potash	Jinhai Lithium	Guoneng Mining
Mode of cooperation	After adjustments made by Jintai in Oct, the 3ktpa project has been completed and the 4ktpa project has been adjusted to apply the purchase and sales model, with the whole 7ktpa capacity being operated by Sunresin and operating expenses paid by Jintai. At present, Sunresin has a 4.39% stake in Jintai Lithium.	Zangge purchases adsorption equipment from Sunresin with other equipment purchased separately and operates the project by itself.	Sunresin provides production line transformation services for two projects with a production capacity of 1ktpa and 4ktpa, respectively.	Sunresin provides mother liquor recovery technology for Qinghai Salt Lake Potash's participation in BYD's 600tpa pilot production line.	Sunresin is responsible for the whole line design, construction, commissioning and training of lithium carbonate project to produce qualified products.	Sunresin is responsible for the construction of the production line, the design and manufacture of production line equipment, installation and commissioning, as well as the management of the processing production operation after the production line is put into operation, and the output of lithium hydroxide products in line with the contract.
Existing capacity	3ktpa	10ktpa	10ktpa	10ktpa	-	-
Capacity under construction	4ktpa		5ktpa process optimization	20ktpa	10ktpa	10ktpa
Process technology	Adsorption + membrane	Adsorption method	Gradient coupling membrane separation and multi-level lithium-ion concentration high Mg/Li ratio brine lithium extraction	Adsorption and "adsorption + membrane"	Adsorption + membrane	Adsorption + membrane
Salt lakes	Qinghai Balun Mahai Lake	Qinghai Chaerhan Salt Lake	Qinghai Yiliping Salt Lake	Qinghai Chaerhan Salt Lake	Qinghai Da Qaidam Salt Lake	Tibetan Kyetsé Tsakha and Lungmu Tso salt lakes

Source: official announcements, CITICS Research (Guoneng Mining's planned production line is lithium hydroxide)

Table 7

Fig. 10: Industrial grade and battery grade lithium carbonate prices (Rmb10,000/t)

Source: Asian Metal, CITICS Research

Ion-exchange resins promote energy conservation through hydrometallurgical applications

Hydrometallurgy based on adsorbent resin enjoys unparalleled advantages in terms of energy conservation and environmental protection. Metallurgy involves the enrichment, reduction and purification of metallic elements. Among the steps, reduction is inevitably energy-intensive as it involves the transfer of electrons and has to be powered by coal or via electrolysis. For the enrichment and purification steps, the simple adsorbent resin method can be employed, which basically does not generate significant environmental pollution. In the case of gallium extraction, for example, the adsorption method does not use environmentally stressful reagents such as mercury, strong acids and bases and also avoids the carbon footprint of the production process of these toxic and harmful reagents and is therefore very friendly to the environment.

Table 8

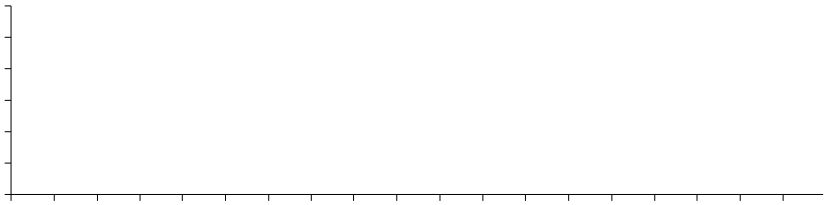
Emerging technologies highlight the importance of gallium. Gallium compounds are widely used in magnets, LEDs, photovoltaics, RF, switches, etc, especially in consumer electronics, which has an intensive use of many emerging technologies that use gallium. For example, Apple has now equipped its Display Pro XDR, iPad Pro and Macbook Pro products with mini-LED display, in which the LED material must use gallium element. And gallium nitride chargers are also common today, which deliver a charging capacity of more than 100W for faster smartphone charging.

Fig. 11: Gallium-containing mini-LED panel used in iPad Pro

Source: Apple website

Gallium extraction is a mature and profitable segment of Sunresin. The Company has been engaged in gallium extraction for many years and won the second prize of

Fig. 12



Source: Wind, CITICS Research

Sunresin's adsorptive separation technology thrives in hydrometallurgical applications across key metals. The Company's hydrometallurgy technology is capable of extracting relevant energy metals such as nickel, cobalt, vanadium and uranium, of which the nickel extraction technology has been granted multiple patents. The Company's nickel and cobalt projects are being actively promoted and are expected to replicate the Company's business model in the salt lake lithium extraction segment to become new sources of profit growth. The uranium extraction segment is also expected to usher in a period of high growth amid the rapid development of nuclear power in China.

Table 9

Metal	Progress
Nickel	The Company's high-efficiency nickel adsorbent reached the best levels reported by international companies in the performance test of nickel ore in East Asia. With proprietary processes, it has provided nearly Rmb40mn worth of integrated solutions consisting of adsorbent materials and system equipment for overseas customers.
Cobalt	-based project is currently in the stage of equipment installation, with the start of production expected in 2022. The project is expected to play a demonstration role and help the Company secure contracts from other cobalt mines in the DRC.
Uranium	Stable annual supply for African mines
Gold	Stable supply of adsorbents worth over Rmb1mn for Europe and Africa
Vanadium	Supply contracts worth over Rmb10mn for vanadium production from stone coal

Source: Company announcement, CITICS Research

Electronic and nuclear grade resins exhibit huge growth potential

Company is world-leading in UPS ion-exchange resins

Ultrapure water production is technically very demanding. Pure water has almost no impurities except water molecules and is widely used in industrial manufacturing, recirculating, and food, medical and laboratory-related water uses. Resistivity, bacterial content, microparticles, gas molecules (dissolved oxygen, dissolved nitrogen) and TOC are important indicators of ultrapure water. The specific water quality requirements vary according to the needs of different industries. Sunresin proposed in 2019 that ultrapure water products mainly refer to electronic and nuclear grade ultrapure water, which

requires conductivity above 18MQ and TOC <1-5ppb, or even down to the ppt level, with greater purity than food and medical grade ultra-pure water.

The high-end ultrapure water market is teeming with opportunities with few players.

Fig. 14: Schematic of ultrapure water production within a power plant (blue and green for cation and anion exchange resin, respectively)

Electronic and nuclear grade ultrapure water requires ion exchange resins with high uniformity. Uniform particle size (UPS) resins have unique hydrodynamic properties and exhibit unique properties such as singular and full operational efficiency during the exchange and regeneration of the resin. With outstanding performance for applications in specific industries, they are currently the only choice for producing electronic and nuclear grade ultrapure water. UPS resins are required in the production of ultrapure water used in nuclear power plants. This field has so far been monopolized by a few foreign companies (Dow, LANXESS, Purolite, Mitsubishi).

Sunresin's UPS resin production process has reached an internationally advanced level. At present, most of the resins supplied in the domestic market are made by intermittent kettle suspension polymerization reaction, and their particle sizes are mostly Gaussian distributed with extensive flaws such as wide particle size distribution, low efficiency, fragility, high material consumption. After years of exploration, Sunresin industrialized its proprietary Monojet UPS resin production technology and achieved mass production of UPS spherical resin beads in 2019. With the exception of Zibo Dongda that has mastered the vibration injection gas-liquid phase granulation method (with products mainly used in condensate refining), all other domestic resin manufacturers, including Zhengguang Industrial and Suqing Water Treatment Engineering, adopt the sieving method for UPS resin production. Generally speaking, resins with a uniformity coefficient of less than 1.2 are deemed

Brand	DuPont	Sunresin	Comparison
Hydrogen-oxygen form rate (%)	-	-	Flat
Delta TOC (ppb)			Excellent

Source: Each company announcement, CITICS Research Cation resin = H; Anion resin = OH

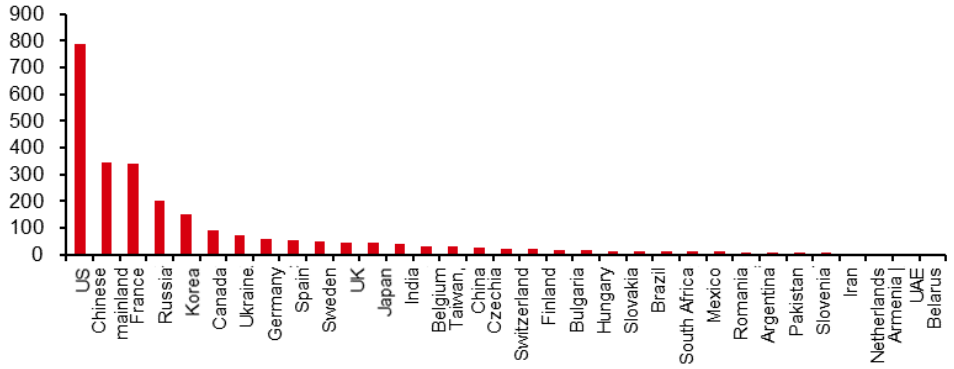
Electronic grade resins for ultrapure water production are set to boom with the semiconductor industry

to reach US$384mn by 2030. Considering that the basically 1/4 of that of the semiconductor industry chain, that display and semiconductor resins are close in process and cost, and that the display industry is also in the eve of a big boom of mini-LED and micro-LED displays, we expect resin demand from the display industry to reach Rmb100mn by 2030. In other words, the entire electronic grade resin market size will reach c. US$400mn. **Electronic grade resin is one of the most difficult types to produce among all adsorbent resins, and its supply follows a standard procedure. Sunresin is already working with enterprises including BOE Technology on product verification, and if things go well, it is expected to quickly achieve import substitution and gain an immense headroom for growth.**

Table 11: Ultrapure water and ion exchange resin demand from semiconductor industry, 2017-2030E

Item	2017	2018	2019	2020	2021E	2022E	2025E	2030E
Global wafer shipping area (mn square inches)	11,810	12,732	11,810	12,407	14,350	15,758	21,174	33,837
Ultrapure water demand per square inch of wafer (m^3)	0.1013	0.1013	0.1013	0.1013	0.1013	0.1013	0.1013	0.1013
Semiconductor industry ultrapure water demand (mn m^3)	1,196.35	1,289.75	1,196.35	1,256.83	1,453.66	1,599.02	2,144.93	3,427.64
Resin demand per tonne of water (10-6 m^3)	7.716	7.716	7.716	7.716	7.716	7.716	7.716	7.716
Global resin demand (m^3/year)	9,231.06	9,951.72	9,231.06	9,697.69	11,216.40	12,338.04	16,550.25	26,447.69
Global resin market (US$100mn/year)	1.35	1.45	1.35	1.41	1.63	1.79	2.41	3.84

Fig. 17: Nuclear power production by country in 2020 (TWh)



Source: Wind, CITICS Research

Nuclear power construction during the 13th FYP period missed expectations. According to the *Mid- and Long-term Development Plan for Nuclear Power (2011-2020)*, China aimed to have put into operation 58mn kW of nuclear power capacity in addition to having 30mn kW under construction by the end of 2020, representing a total scale of 88mn kW. However, due to safety and other factors, by the deadline, China had only 48 nuclear power units in operation with a total installed capacity of c. 51.03mn kW and 16 under construction with a total installed capacity of c. 17.38mn, in addition to 3 units with a total installed capacity of 3.61mn kW that were approved but had not started construction; they combine to represent 72.02mn kW, 16mn kW short of the planned target.

Nuclear power construction will accelerate during the 14th FYP period in order to achieve carbon peaking by 2030. If China is to increase its renewable energy share to 25% by 2030, it will have to replace 1.5bn tonnes of standard coal equivalent (tce) with nuclear power, corresponding to 4.5trn kWh of electricity. China has pledged to increase its installed wind and solar power capacity to more than 1.2bn kW by 2030. We expect it to actually reach 1.5bn KW. However, due to the availability factor for wind and PV solar power generation, we expect electricity from wind and solar to reach 2.3trn kWh by 2030. And add to it 1.4trn kWh of hydropower. Then there is still 800bn kWh yet to be filled by nuclear power. At an annual nuclear availability of 7,300 hours (c. 83% of the year), it will require an installed nuclear capacity of 110mn kW.

Construction of 38 million kW of nuclear power units is expected to start before 2025. Considering the long construction cycle of nuclear power plants, all the new nuclear capacity required by 2030 needs to start construction by 2025, while there are still a 38 million kilowatts installed nuclear power capacity gap, roughly requiring eight nuclear units to be constructed each year before 2025 with an annual capacity addition of c. 8mn kW. This is basically equivalent to 80% of the total capacity of China's current nuclear units in operation.

China currently has 71 nuclear power units, most of which are pressurized water reactors. As of 31 Oct 2021, there were 71 nuclear power units under construction and in operation in the Chinese mainland. Of the 52 in operation, there were one high-temperature gas-cooled reactor, two heavy water reactors, and 49 pressurized water reactors. And all the 19 units under construction were third-generation pressurized water reactors.

Nuclear-grade ultrapure water ion exchange resins play an important role in nuclear power plants. Nuclear grade ultrapure water ion exchange resins are mainly

used in the feedwater and water treatment systems of the first and second circuits of reactors. The supply of reliable ultrapure water to the second circuit of the steam

to provide steam of acceptable quality. Nuclear grade ultrapure water can reduce fouling on the second circuit, reduce thermal resistance to heat transfer from the first circuit to the second circuit, and increase steam production, in addition to reducing fouling deposits on the generator turbine blades. Moreover, nuclear grade resins that are applied to the first circuit water treatment system in nuclear power plants must have a high regeneration and transformation rate, very low impurity content, good resistance to irradiation decomposition, and ability to operate at higher operating flow rates and rather high temperatures, and the reactions of organic or inorganic impurities released from the system during use must be within allowable limits.

Fig. 18: Schematic of the primary pipes of China's homegrown third-generation nuclear reactor

Source: "Failure analysis and modification of desalination water system in Tianwan Nuclear Power Plant" (TAN Mingyu)

The domestic nuclear grade ultrapure water adsorbent resin market is expected to reach Rmb1.8bn by 2030, from which the Company stands well to benefit. Referring to the assumptions in our previously published report, *Sunresin New Materials (300487.SZ) In-depth Tracking Report: R&D-driven rapid growth across resin segments* (4 Jun 2020), we forecast that domestic nuclear power installed power rating will reach 110mn kWh, representing a nuclear grade ultrapure water resin market of c. Rmb1.2bn by 2030, and it will reach Rmb1.8bn if the replacement cycle of resin is taken into account. Sunresin is one of the few domestic nuclear grade ultrapure water resin suppliers and maintains cooperation with multiple nuclear power related enterprises. Compared with leading foreign companies, it has advantages in terms of supply cycle, supply stability and prices and its products are expected to rapidly replace their imported counterparts.

Table 12: Domestic nuclear grade resin market size, 2018-2030E

Item	2018	2019	2020	2030E
Number of nuclear power units	45	47	51	110
Installed nuclear power capacity (10^8 W)	459	487	510	1,100
Demand for desalinated water per GW of nuclear power capacity (m^3/s*GW)	0.0037	0.0037	0.0037	0.0037
Nuclear for ultrapure water (106 m^3/year)	5.35	5.69	5.94	12.82

Item	2018	2019	2020	2030E
Resin demand per tonne of ultrapure water (m^3)	0.012	0.012	0.012	0.012
Resin demand (m^3/cycle)	64,200	68,280	71,333	153,856
Replacement cycle (year)	3	3	3	3
Resin market size (Rmb10^8/year)	7.55	8.0	8.38	18.09

Source: National Nuclear Safety Administration, CITICS Research forecast

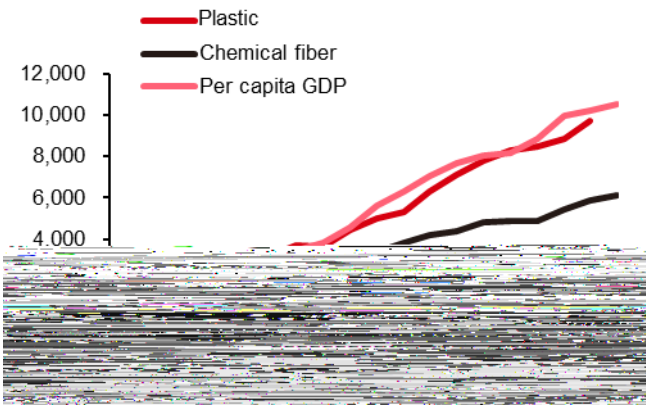
Resins for separation and purification applications help reduce carbon emissions

Resins for biodegradable plastics usher in a period of rapid development thanks to favorable policy

The Company has a solid presence in resins for the purification of upstream raw materials of degradable plastics. The Company started in 2001 with a focus on juice treatment and has over the 20 years since then accumulated profound knowhow in the purification of food ingredients such as juice, pectin, pigment, sugar alcohol and fructose syrup. With the introduction of plastic restrictions and the rise of biodegradable plastics, the Company found through research that ion exchange resins have extensive application scenarios for the purification of upstream raw materials of biodegradable plastics such as lactic acid and BDO, and forayed into the production of biodegradable plastics.

There is a stable growth driver for domestic plastic consumption. According to the National Bureau of Statistics, the growth of plastic and chemical fiber consumption has a strong positive correlation with the growth of per capita GDP. The growth rate of plastic and chemical fiber consumption basically fluctuates above and below the growth rate of GDP per capita. Despite slower domestic economic growth, we expect the growth rate to maintain the pace of 5-6% in the next decade.

Fig. 19: Domestic plastic and chemical fiber production and GDP per capita (10kt, US$)



Source: Wind, CITICS Research

Fig. 20: Domestic plastic and chemical fiber production and per capita GDP growth

Source: Wind, CITICS Research

The policy promotes degradable plastics. China has introduced three phases of restrictions on the production, sale and use of disposable plastics by 2020, 2022 and 2025, respectively. Currently, the production and sale of ultra-thin plastic shopping bags less than 0.025 mm thick and polyethylene agricultural film less than 0.01 mm thick have been banned. Increased prohibitions will be imposed on plastic express delivery packaging materials by 2022 and disposable tableware by 2025.

Table 13: China's laws and regulations on single-use plastics

Laws and regulations	Type	Stipulations
Solid Waste Pollution Prevention and Control Law of the People's Republic of China	Restriction	Article 69 The state shall prohibit and restrict the production, sale, and use of non-degradable plastic bags and other disposable plastic products according to the law. The owners of goods retail sites, e-commerce platform enterprises, express delivery enterprises, and food delivery enterprises shall report the use and recovery of disposable plastic products such as plastic bags to the commerce, post and other departments in accordance with the relevant provisions issued by the state. The state shall encourage and guide the reduced use and active recovery of plastic bags and other disposable plastic products and promote the application of recyclable, easily recyclable and degradable alternative products.
	Punishment	Article 106 Where, in violation of the provisions of this Law, the provisions on the prohibition or restriction of the use of non-degradable plastic bags and other disposable plastic products fail to be complied with, or the use of plastic bags and other disposable plastic products fails to be reported in accordance with the relevant provisions issued by the state, the commerce, post, and other departments of local people's governments at or above the county level shall order the taking of corrective action and impose a fine of not less than Rmb10,000 nor more than Rmb100,000.
Opinions on Further Strengthening the Treatment of Plastic Pollution	Prohibition	Plastic products prohibited from production and sale. It is prohibited to produce and sell ultra-thin plastic shopping bags less than 0.025 mm thick and polyethylene agricultural plastic films less than 0.01 mm thick. It is prohibited to use medical waste as raw materials to manufacture plastic products. The import of waste plastics is comprehensively banned. By the end of 2020, the production and sale of disposable foaming plastic tableware and disposable plastic cotton swabs should be prohibited; the

Laws and regulations

Laws and regulations	Type	Stipulations

Item	2017	2018	2019	2020	Annual growth	2021E	2025E	2030E
(10kt)								
Other usage (10kt)	50	50	50	50	-	50	50	50
Total (10kt)	-	-	-	512.5	-	535.2	649.3	852.6
Penetration rate of biodegradable plastics	-	-	-	3%	-	5%	50%	80%
Domestic demand for biodegradable plastics (10kt)	-	-	-	15.4				

the capacity under construction and proposed to be built has reached 1.5mtpa. The refining process is particularly important in the production of lactic acid, which requires the use of resin to remove heavy metals, proteins, pigments and other impurities from the fermentation broth to obtain lactic acid products of different grades, such as food grade, refined grade and high purity grade, of which high purity grade lactic acid is mainly used in the production of PLA. Sunresin has deep expertise in food processing and has secured orders from leading PLA producers such as Jindan Lactic Acid Technology and BBCA Biochemical.

Table 16: Major PLA producers (10ktpa)

Company	Jindan Lactic Acid Technology	Kingfa Sci & Tech	BBCA Biochemical	Hisun Biomaterials	COFCO Biotechnology
Capacity	Lactic acid: 12.8 Lactide: 1 Polylactic acid: 0.1	-	Lactic acid: 15 Polylactic acid: 10	Polylactic acid: 6.5	Polylactic acid: 3
Capacity under construction	High gloss pure lactic acid: 5 Polylactic acid: 1	Polylactic acid: 3	Lactic acid: 50 Polylactic acid: 30	Polylactic acid: 15	Polylactic acid: 10

Source: Company announcement, CITICS Research

Lactic acid purification opens up an adsorbent resin market valued in the hundreds of millions of RMB. We expect that the penetration rate of PLA in degradable plastics will reach 40% and 50% in 2025 and 2030, respectively, corresponding to a PLA demand of 1.3mt and 3.4mt. According to our research, each 10kt of lactic acid production requires c. 40m^3 of adsorbent resin for purification. Assuming the average price of resin at 80 RMB per liter, it will represent a market of Rmb600mn for adsorbent resin by 2025 and Rmb1.6bn by 2030, making adsorbent resin for purification another high-quality business segment of Sunresin.

With performance and other factors considered, PLA+PBAT is the mainstream direction of biodegradable plastics at present. Although PLA has high strength, good thermoplasticity and good biocompatibility and is more in line with the direction of carbon emissions reduction, it is brittle and has poor thermal stability, weaknesses that can be well complemented by PBAT that has good ductility, impact resistance and thermal stability and is often used to toughen other brittle plastics. The current mainstream degradable material solution in the market is to co-extrude PLA and PBAT (to integrate their hardness and brittleness properties). It is expected that the share of degradable plastics will exceed 60% by 2025 and rise further by 2030.

Fig. 23: Price/performance comparison of common biodegradable plastics

Source: "Development and trends of biodegradable plastics" (LU Haixu)

Domestic PBAT capacity expansion drives up demand for upstream raw material BDO. According to industrysourcing.cn, the domestic PBAT production capacity was only 293ktpa in 2020, but the capacity under construction for the period from 2021 to 2023 exceeds 4mt. At present, PBAT is mainly prepared using the direct esterification process in China, with upstream core materials including terephthalic acid (PTA), adipic acid (AA) and 1,4-butanediol (BDO). The BDO consumption per unit of PBAT is between 0.5 and 0.6. Based on the unit consumption of 0.55, it is expected that the new capacity under construction from 2021 to 2023 will have a BDO demand of c. 2.3mt.

Table 17: Domestic PBAT capacity and layout (as of Nov 2021)

Company	Existing capacity	Capacity under construction	Commissioning/planned commissioning	Planned capacity
Xinjiang Blue Ridge Tunhe Chemical Industry Co., Ltd.	13		2020	24

Company	Existing capacity	Capacity under construction	Commissioning/planned commissioning	Planned capacity
Jiangsu Sanfame Co., Ltd.		4		12
Hubei Yihua Chemical Industry Co., Ltd.		6		
Xinjiang Tianye Co., Ltd.		10		50
Anhui Anqing Shuguang Chemical Co., Ltd.		6		30
Hunan Yussen Energy Technology Co., Ltd.		6		
Qixiang Tengda Chemical Co., Ltd.				6
Other				125.4
Total	**29.3**	**428.4**		**774.4**

Source: industrysourcing.cn, CITICS Research

BDO enters the expansion period, creating a huge demand for purification resin. According to baiinfo.com, while the current domestic BDO production capacity is only 2.339mtpa, the planned capacity has exceeded 10mtpa since 2021, benefiting from strong downstream demand. At present, BDO is mostly prepared using the Repper process (acetylene-formaldehyde process) in China, which mainly consists of two steps: 1) acetylene and formaldehyde are reacted to form 1,4-butynediol (BYD); 2. BYD is hydrogenated to form BDO. Since metal ions such as Cu will enter the feed solution during BYD generation, which will affect the subsequent hydrogenation, a deionization process is required using a combination of ion exchange resins of strong acid cation resin, weak base anion resin and strong base anion resin. According to our research, each 10kt of BDO requires Rmb400,000-Rmb800,000 worth of adsorption materials. According to existing capacity plans, this will represent a market with a central tendency size of Rmb420mn for purification resin by 2026. Sunresin is expected to become a mainstream supplier in this market by leveraging its resin preparation and modification technology.

Table 18: Domestic BDO capacity under construction and planned capacity (10ktpa, as of Dec 2021)

Company	Project location	Process route	Capacity	Expected start of production
Wanhua Chemical	Meishan, Sichuan	Acetylene production from natural gas by acetylene-formaldehyde process	10	2022
Chongqing Hongqingda	Sichuan, Chongqing	Hong Kong Guanda acetylene-formaldehyde process	20	-
Dongtian Huaye	Shihezi, Xinjiang	Acetylene production from natural gas by acetylene-formaldehyde process	30	-
Guotai Xinhua	Xinjiang Zhundong Economic and Technological Development Zone	Acetylene-formaldehyde process	10	2022
Xinjiang Shuguang Lvhua	Xinjiang Tiemenguan Economic and Technological Development Zone	Acetylene production from natural gas by acetylene		

Company	Project location	Process route	Capacity	Expected start of production
	Shanxi			
Yussen Energy	Daya Bay, Huizhou, Guangdong	Maleic anhydride process	12+16	120ktpa, with construction period from Sep 2021 to Aug 2023
Junzheng Chemical	Wuhai, Inner Mongolia	Acetylene-formaldehyde process	2x60	May 2021 - Dec 2023
Sinopec Chongqing SVW Chemical	Sichuan, Chongqing	-	20	-
Zhongjing Petrochemical	Fuqing, Fujian	Maleic anhydride process	60	2024
Henan Energy Hebi	Hebi, Henan	Acetylene-formaldehyde process	40	-
Jurong New Materials	Luntai County, Xinjiang	-	30	-
Xinjiang Markor	Korla, Xinjiang	-	10	Oct 2022
Inner Mongolia Guangju	Wuhai, Inner Mongolia	-	12	-
Hualu Hengsheng Chemical	Dezhou, Shandong	-	18	2021-2023
Sanwei Holding	Wuhai, Inner Mongolia	Acetylene-formaldehyde process	90	Dec 2026
Dongjing Biological	Wuhai, Inner Mongolia	Hong Kong Guanda acetylene-formaldehyde process	20	Jun 2022
Shenghong Petrochemical	Lianyungang, Jiangsu	Maleic anhydride process	30	-
Wuheng Chemical	Ningdong, Ningxia	-	2x11.6	Commissioned in early Jul 2022
Henan Energy Xinjiang	Baicheng County, Xinjiang	-	20	-
Foryou Corporation	Taiyuan, Shanxi	Acetylene-formaldehyde process	30	-
Zhongke Qicheng	Zhumadian, Henan	Acetylene production from natural gas by acetylene-formaldehyde process	20	-
Shandong Tianyi		Maleic anhydride process	5.225	Construction period from 2022 to 2025
Inner Mongolia Jiutai	Hohhot, Inner Mongolia	Acetylene-formaldehyde process	30	-
Zhongguan Petrochemical	Zhuhai, Guangdong	Maleic anhydride process	10	-

Source: www.cheminfo.cn, official announcements, CITICS Research

Resin applications in life sciences accelerate

The global chromatography filler market is expected to reach nearly US$3bn by 2024.

prospectus), the global chromatography filler industry market size was c. US$1.978bn in 2018 and is expected to grow at a CAGR of 7.16% from 2019 to 2024 to reach US$2.993bn in 2024. Asia-Pacific is expected to lead the global chromatography filler market growth from 2019 to 2024 with a CAGR of 9.39% and see its share in the global market grow from 22.4% in 2018 to 25.39% in 2024.

Fig. 26: Chinese biopharmaceutical market size, 2014-2030E (Rmb bn)

Source: Frost & Sullivan (including forecast, cited from Junshi Biosciences prospectus)

The Company has extensive resin products for life science applications with multiple domestically leading technologies. Sunresin started to lay out in the biopharmaceutical field very early on. With its main products in this respect including peptide solid phase carriers, enzyme catalytic carriers, biological macromolecule separation and purification resins, resins for small nucleic acid drug separation and purification, microcarriers, resins for purification of plant extracts, pharmaceutical resin microspheres and resins for hemoperfusion, the Company has taken up a rather high share in the domestic market. The Company has multiple domestically leading technologies: 1) extraction of cephalosporin C and enzymatic preparation of 7-aminocephalosporanic acid (7-ACA); 2) extraction of industrial hemp (CBD); 3) purification of biological macromolecules, where it offers a series of first homegrown products, including microcarrier (LX-MC-dex1), butyl 4B filler for hepatitis B vaccine purification, microgel column blood assay Seplife G50SF, and CM Seplife C50 and DAEA Seplife A50 for blood product purification.

Table 19

Resin type	Downstream applications
Resin for western pharmaceuticals	Extraction and separation of western pharmaceutical APIs and intermediates, with the cephalosporin series resin breaking foreign monopoly
Resin for purification of plant extracts	Industrialization of enzymatic preparation of 7-ACA, which is used for the immobilization of glucose isomerase in starch industry, of glycosylase in glycation reaction, and of lipase in oil industry
Immobilized enzyme carrier	Extraction and separation of active ingredio1r

involves intensive use of toxic and harmful reagents and the emission of a large amount of organic and metal waste, which is harmful to the environment and human health. In contrast, the enzymatic process is simpler and safer, more environmentally friendly and less costly than the chemical process. Therefore, domestic producers adopting the chemical process lack a competitive advantage compared with overseas.

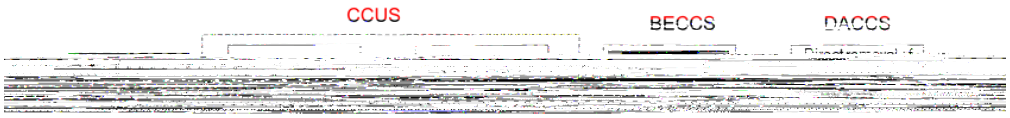
The Company has successfully achieved the enzymatic preparation of 7-ACA, which increases the global competitiveness of its 7-ACA products. Sunresin Technology has been conducting research on enzyme carrier technology for enzymatic production of 7-ACA since 2005 and has cooperated with domestic 7-ACA producers such as Joincare Pharmaceutical, making the domestic production of 7-ACA using enzymatic process a reality. At present, the Company has maintained a good cooperation relationship with major cephalosporin manufacturers, such as CSPC Pharmaceutical and Kelun Pharmaceutical, helping reduce their production costs significantly.

The Company has established a new biotech subsidiary to accelerate penetration in the domestic market. The Company set up a new subsidiary, Suzhou Sunresin Biotechnology Co., Ltd., in Suzhou Industrial Park in Jul 2021, which has a production capacity of 50,000L/year for life science products and a new upstream cell culture laboratory with increased annual R&D expenditure. The life science segment is the Company's prioritized segment for long-term development and is benchmarked against GE. Leveraging the Company's R&D strengths, the subsidiary is expected to achieve rapid penetration in the domestic market.

Adsorbent resins for carbon fixation have a bright outlook with carbon trading

Carbon trading is an important market mechanism to promote carbon neutrality.

Fig. 30: Schematic diagram of CCUS technology



Source: *2021 Annual Report on Carbon Dioxide Capture, Utilization and Storage (CCUS) in China* (Chinese Academy of Environmental Planning, Ministry of Ecology and Environment), CITICS Research

CCUS will become increasingly economically productive as carbon prices gradually increase. The current average price per t of CO_2 treated by CCUS is US$150/t, which is not attractive even in the EU, where carbon prices are high. We expect CCUS to be increasingly widely promoted as it becomes more economically efficient, driven by the economies of scale, technological advances, and rising carbon prices.

The Company's Spelite-CT series carbon capture resin products have been sold to Europe. The traditional CO_2 capture technology is based on solvent absorption, with the core absorption material being liquid amine compounds. Liquid amines are highly adsorptive and cheap, but their regeneration is energy-intensive and is corrosive to ary Seplite-CT polymeric adsorbent resin, which has a macroreticular pore structure, boasts extensive advantages over traditional amine adsorbents, including large specific surface area, high adsorption efficiency, designed pore size distribution, controllable regeneration, less corrosion on equipment and ease of use. The product has wide application scenarios, such as thermal power generation, natural gas processing, steel production, coal chemical industry, chemical production, cement production and direct removal of CO_2 from the atmosphere.

Fig. 31: Main technical routes of CO_2 capture

Source: Sunresin website, CITICS Research

The underlying technology of the Company's Seplite series of resins is included on a national platform for technology transformation. In addition to CO_2 capture, the Company's "adsorption technology for efficient treatment of Volatile organic compounds (VOCs)" is listed in the first batch of technologies in the National Integrated Service Platform for the Transformation of Ecological and Environmental Science and

Technology Achievements. The Company's Seplite®LXQ resin and Sepsolut® integrated VOC treatment system has been validated by multiple enterprises to deliver an adsorption and removal rate of more than 99.9% for chlorinated volatile organic compounds. Boasting higher safety, greater stability, high precision, long life, high recovery rate, and the ability to recover lost raw materials and solvents while meeting emissions standards, the technology has become a powerful tool in the field of VOC treatment.

New plants will solve the capacity bottleneck

New capacity construction makes steady advances. As the Company's downstream application scenarios mushroom, the existing production capacity can no longer meet the demand in domestic and overseas markets, with under-capacity limiting its further development. In Jun 2019, the Company raised Rmb340mn via a convertible bond issue to fund its new materials industrial park project in Gaoling, which the Company expects will have produce 25kt of various types of resin annually after reaching design capacity; at the same time, the Company invested Rmb400mn in a 15ktpa resin project in Pucheng. With the existing 40ktpa production capacity for various types of adsorptive materials and the gradual release of new capacity from the above-mentioned two projects, the Company is expected to have a total capacity of 50ktpa, which will effectively resolve its under-capacity issue.

Table 20

Projects under construction	Planned capacity	Progress (as of end-2020)	Planned completion	Product applications
Gaoling Sunresin New Materials Industrial Park Project	2.5	92.24%	Jun 2022	Including adsorption, ion exchange and chelating series of resins
Pucheng Materials Park Project	1.5	44.34%		The products are mainly adsorptive separation products with large-scale applications, especially in the field of electronic and nuclear grade ultrapure water.
Hebi Suncycle Project	10	85.09%		Waste resin treatment and reutilization

Source: Company announcement, CITICS Research

Two new green plants are put into operation.
Gaoling and Pucheng are constructed according to the highest environmental standards for the petrochemical industry and features multiple industry-first emission treatment

The Hebi Suncycle project is launched to form an industrial closed loop. With its subsidiary Hebi Suncycle having obtained the license for its 100ktpa resin resourcification plant, the Company is the only company in the industry to have presence across the entire industrial chain, encompassing resin R&D, production, sales, and recycling and delivering lifecycle services for adsorptive separation materials, which further reduces the environmental impact of resin production and waste and is in line

new production capacity and increasing penetration in downstream markets, the Company offers high growth potential over the long term.

Potential risks

1) Significant price volatility of raw materials; 2) intensified industry competition; 3) progress in various business segments missing expectations.

Earnings forecast and valuation rating

Earnings forecast

Key assumptions:

1) **Ion exchange resin:** As the new Gaoling and Pucheng plants move towards full capacity, the various segments of adsorbent resin are expected to benefit from capacity release in the next 2-3 years and increasing market penetration.

2) **Systems:** The Company's system sales are expected to main stable growth with increasing applications of lithium extraction from salt-lake brines at home and abroad.

3) **Technical services:** The Company's technical services are expected to maintain stable growth with the expansion of adsorption application projects.

Table 21 -2023E

Unit: Rmb mn	2019	2020	2021E	2022E	2023E	2024E
Adsorbent resin						
Operating revenue						

Table 22 -2023E

Item/Year	2019	2020	2021E	2022E	2023E
Operating revenue (Rmb mn)	1,012	923	1,211	1,539	1,958
Operating revenue (YoY,%)	60.1%	-8.8%	31.2%	27.1%	27.3%
Net profit (Rmb mn)	251	202	323	448	575
Net profit (YoY,%)	75.4%	-19.6%	59.8%	38.8%	28.4%
EPS (Rmb, Basic)	1.14	0.92	1.47	2.04	2.62
Gross margin	49.8%	46.6%	47.4%	48.3%	48.8%
ROE (%)	19.9%	12.2%	15.1%	17.8%	19.2%
BVPS (Rmb)	5.74	7.51	9.73	11.46	13.65
PE (x)	94.5	104.6	65.4	47.2	36.7
PB (x)	18.8	12.8	9.9	8.4	7.0

Source: Wind, CITICS Research forecast Note: Closing price as of 27 Jan 2022

Valuation and rating

1) PE valuation

Comparable companies in the industry are valued at an average PE of 57x in 2022. We identify Zhengguang Industrial, Jiuwu Hi-Tech and Nanomicro Technology as comparable companies, whose average PE in 2022 is 57x according to Wind consensus estimates.

Table 23: Valuation of Sunresin vs. comparable companies, 2020-2023E

Ticker	Company	Share price	EPS				PE (x)			
			2020	2021E	2022E	2023E	2020	2021E	2022E	2023E
301092	Zhengguang Industrial	34.00	1.27	1.00	1.21	1.58	-	34.0	28.1	21.5
300631	Jiuwu Hi-Tech	33.56	0.76	0.70	1.02	1.36	22.74	49.0	33.7	25.4
688690	Nanomicro Technology	63.55	0.20	0.35	0.57	0.85	-	174.3	110.0	73.7
Average								85.8	57.3	40.2
300487	Sunresin New Materials	96.19	0.94	1.47	2.04	2.62	92.9	65.4	47.2	36.7

Source: Wind, CITICS Research forecast Note: Closing prices as of 27 Jan 2021; EPS forecasts for comparable companies are Wind consensus estimates

2) Vertical PE valuation

The Company's average PE over the past 5 years is 50x. The Company's PE (TTM) from 2016 to the present time is 50x with a mean ±1 standard deviation PE range of 34x-67x. Anticipating high growth of earnings and continued valuation matching in the next 2-3 years thanks to capacity ramp-up and increasing penetration in the downstream

ion as reference, we assign the Company 67x 2022 PE.

Income Statement (RMB mn)

Indicator	2019	2020	2021E	2022E	2023E
Operating revenue	1,012	923	1,211	1,539	1,958
COGS	508	493	637	796	1,002
Gross profit margin	49.8%	46.6%	47.4%	48.3%	48.8%
Taxes and surcharges	9	12	12	14	18
Selling expenses	29	24	29	34	39
Selling expense ratio	2.9%	2.6%	2.4%	2.2%	2.0%
Administrative expenses	84	83	97	123	157
Administrative expense ratio	8.3%	9.0%	8.0%	8.0%	8.0%
Financial expenses	4	41	2	1	0
Financial expense ratio	0.4%	4.4%	0.1%	0.1%	0.0%
R&D expense	62	55	70	86	110
R&D expense ratio	6.2%	5.9%	5.8%	5.6%	5.6%
Investment income	1	1	1	1	1
EBITDA	324	354	430	573	719
Operating profit margin	28.09%	23.28%	29.00%	31.56%	31.74%
Operating profit	284	215	351	486	622
Non-operating revenue	0	3	1	1	2
Non-operating expenses	1	1	1	1	1
Total profit	284	217	351	486	622
Income tax	36	21	34	48	61
Income tax rate	12.6%	9.8%	9.8%	9.8%	9.8%
Non-controlling interest	(3)	(7)	(6)	(10)	(14)
Net profit attributable to shareholders	251	202	323	448	575
Net profit margin	24.8%	21.9%	26.7%	29.1%	29.4%

Balance Sheet (RMB mn)

Indicator	2019	2020	2021E	2022E	2023E
Cash and cash equivalents	401	605	952	1,318	1,657
Inventories	316	332	412	515	657
Accounts receivable	233	286	323	413	551
Other current assets	118	160	218	196	231
Current assets	1,068	1,383	1,905	2,442	3,096
Fixed assets	672	673	649	619	584
Long-term equity investment	2	3	3	3	3
Intangible assets	172	167	164	161	158
Other non-current assets	341	327	329	331	333
Non-current assets	1,186	1,170	1,144	1,114	1,078
Total asset	2,253	2,553	3,049	3,556	4,174
Short-term loans	0	71	0	0	0
Accounts payable	302	200	339	407	484
Other current liabilities	288	423	370	437	510
Current liabilities	590	695	709	844	994
Long-term borrowings	50	23	23	23	23
Other long-term liabilities	333	163	163	163	163
Non-current liabilities	383	186	186	186	186
Total liabilities	973	880	894	1,030	1,180
Share capital	207	215	220	220	220
Capital reserve	366	615	817	817	817
Total owner's equity attributable to parent company	1,261	1,650	2,138	2,519	3,001
Minority interests	19	22	16	7	-7
Total owners' equity	1,280	1,673	2,155	2,526	2,994
Total owners' equity and liabilities	2,253	2,553	3,049	3,556	4,174

Cash Flow Statement (RMB mn)

Indicator	2019	2020	2021E	2022E	2023E
Net profit	248	196	317	439	561
D&A	33	90	71	76	82
Change in working capital	-393	-104	-110	-44	-186
Other operating cash flow	65	79	21	7	19
Net cash flow from operating activities	-47	260	298	478	477
Capex	-236	-53	-43	-43	-43
Investment income	1	1	1	1	1
Other investing cash flow	-31	-6	-1	-1	-2
Net cash flow from investing activities	-265	-58	-43	-44	-44
Change in equity	54	1	208	0	0
Change in liability	32	41	-71	0	0
Dividend payment	-30	-52	-43	-67	-94
Other financing cash flow	242	-40	-2	-1	0
Net cash flow from financing activities	298	-50	92	-69	-94
Net increase in cash and cash equivalents	-14	152	347	366	339

Major financial indicators

Indicator	2019	2020	2021E	2022E	2023E
YOY (%)					
Operating revenue	60.1%	-8.8%	31.2%	27.1%	27.3%
Operating profit	73.0%	-24.4%	63.4%	38.3%	28.0%
Net profit	75.4%	-19.6%	59.8%	38.8%	28.4%
Profit margin (%)					
Gross profit margin	49.8%	46.6%	47.4%	48.3%	48.8%
EBITDA Margin	32.0%	38.4%	35.5%	37.3%	36.7%
Net profit margin	24.8%	21.9%	26.7%	29.1%	29.4%
Return rate(%)					
ROE	19.9%	12.2%	15.1%	17.8%	19.2%
ROA	11.2%	7.9%	10.6%	12.6%	13.8%
Other(%)					
Asset-liability ratio	43.2%	34.5%	29.3%	29.0%	28.3%
Tax rate	12.6%	9.8%	9.8%	9.8%	9.8%
Dividend payout ratio	20.6%	21.2%	20.9%	20.9%	21.0%

Source: Company announcement, CITICS Research forecast

Analyst Certification: The analysts primarily responsible for the preparation of all or part of the research report contained herein hereby certify that: (i) the views expressed in this research report accurately reflect the personal views of each such analyst about the subject securities and issuers; and (ii) no part of the expressed in this research report.

Investment rating system

Rating standard for Investment Recommendations

Investment ratings involved in investment advice contained in this report are divided into stock rating and sector rating (unless stated otherwise). Rating standard is based on the performance relative to the market in 6 to 12 months from the report distribution date, i.e. Performance of company stock price (or sector index) over the 6-to-12-month period from distribution date is benchmarked against the change in market representative index over the same period. CSI 300 Index serves as the benchmark index for the A-share market; the NEEQ Component Index (stocks subject to negotiated transfer) or the NEEQ Market Making Index (stocks subject to market making) is the benchmark index for the NEEQ board; MSCI-China Index is the benchmark index for Hong Kong market; NASDAQ Composite serves as the benchmark index for U.S. market; and Kosdaq Composite Index or KOSPI Composite Index as the benchmark index for South Korea market.

	Ratings	Description
Stock ratings	BUY	Increase relative to market representative index over 20%
	OVERWEIGHT	Increase relative to market representative index between 5% and 20%
	HOLD	Increase relative to market representative index between -10% and 5%
	SELL	Decrease relative to market representative index over 10%
Industry ratings	OUTPERFORM	Increase relative to market representative index over10%
	NEUTRAL	Increase relative to market representative index between -10% and 10%
	UNDERPERFORM	Decrease relative to market representative index over 10%

Other Disclosures