As filed with the Securities and Exchange Commission on December 27, 2022

SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

Amendment No. 3

to

FORM S-1

REGISTRATION STATEMENT

Under

The Securities Act of 1933

AMPRIUS TECHNOLOGIES, INC.

(Exact name of Registrant as specified in its charter)

Delaware

(State or other jurisdiction of incorporation or organization)

3690 (Primary Standard Industrial Classification Code Number) 1180 Page Avenue Fremont, California 94538 (800) 425-8803 98-1591811 (I.R.S. Employer Identification Number)

(Address, including zip code, and telephone number, including area code, of Registrant's principal executive offices)

Dr. Kang Sun Chief Executive Officer Amprius Technologies, Inc. 1180 Page Avenue Fremont, California 94538 (800) 425-8803

(Name, address, including zip code, and telephone number, including area code, of agent for service)

Copies to: Michael J. Danaher Mark B. Baudler Austin D. March Alexandra Perry Wilson Sonsini Goodrich & Rosati, P.C. 650 Page Mill Road Palo Alto, CA 94304 (650) 493-9300

Approximate date of commencement of proposed sale to the public: As soon as practicable after the effective date of this Registration Statement.

If any of the securities being registered on this Form are to be offered on a delayed or continuous basis pursuant to Rule 415 under the Securities Act of 1933, check the following box.

If this Form is filed to register additional securities for an offering pursuant to Rule 462(b) under the Securities Act, please check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering.

If this Form is a post-effective amendment filed pursuant to Rule 462(c) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering.

If this Form is a post-effective amendment filed pursuant to Rule 462(d) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering.

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, anon-accelerated filer, smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company," and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer Non-accelerated filer Accelerated filer □ Smaller reporting company ⊠

Emerging growth company

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 7(a)(2)(B) of the Securities Act.

The Registrant hereby amends this registration statement on such date or dates as may be necessary to delay its effective date until the Registrant shall file a further amendment which specifically states that this registration statement shall thereafter become effective in accordance with Section 8(a) of the Securities Act of 1933, as amended, or until the registration statement shall become effective on such date as the Securities and Exchange Commission, acting pursuant to said Section 8(a), may determine.

EXPLANATORY NOTE

This Amendment No. 3 (the "Amendment") to the Registration Statement on Form S-1 (File No. 333-267691) (the "Registration Statement") is filed solely to amend Item 16(a) of Part II thereof and to file certain exhibits thereto. The remainder of the Registration Statement, including the prospectus that forms a part of the Registration Statement, is unchanged and has therefore been omitted. Accordingly, this Amendment consists only of the facing page, this explanatory note, Item 16(a) of Part II of the Registration Statement, the signature page to the Registration Statement and the filed exhibits.

PART II

INFORMATION NOT REQUIRED IN PROSPECTUS

Item 16. Exhibits and Financial Statement Schedules.

(a) Exhibits

Exhibit Index

Exhibit Number Description 2.1† Business Combination Agreement, dated as of May 11, 2022, by and among Kensington Capital Acquisition Corp. IV, Kensington Capital Merger Sub Corp. and Amprius Technologies, Inc. (incorporated by reference to Exhibit 2.1 to the Company's Current Report on Form 8-K (File No. 001-41314) filed with the SEC on May 12, 2022) Certificate of Incorporation of the Company (incorporated by reference to Exhibit 3.1 to the Company's Current Report on Form 3.1 8-K (File No. 001-41314) filed with the SEC on September 14, 2022) 3.2 Bylaws of the Company (incorporated by reference to Exhibit 3.2 to the Company's Current Report on Form 8-K (File No. 001-41314) filed with the SEC on September 14, 2022) Specimen Common Stock Certificate (incorporated by reference to Exhibit 4.1 to the Company's Current Report on Form _8-K 4.1 (File No. 001-41314) filed with the SEC on September 14, 2022) 4.2 Warrant Agreement, dated as of March 1, 2022, between the Company and Continental Stock Transfer & Trust Company (incorporated by reference to Exhibit 4.1 to the Company's Current Report on Form 8-K (File No. 001-41314) filed with the SEC on March 4, 2022) 4.3 Specimen Warrant Certificate (included in Exhibit 4.2) 4.4 Warrant Agreement, dated September 14, 2022, between the Company and Continental Stock Transfer & Trust Company (incorporated by reference to Exhibit 4.2 to the Company's Current Report on Form 8-K (File No. 001-41314) filed with the SEC on September 14, 2022) Specimen PIPE Warrant Certificate (included in Exhibit 4.4) 4.5 Opinion of Wilson Sonsini Goodrich & Rosati, P.C. 5.1* 10.1 Private Placement Warrants Purchase Agreement, dated as of March 1, 2022, between the Company and Kensington Capital Sponsor IV LLC (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K (File No. 001-41314) filed with the SEC on March 4, 2022) Amprius Technologies, Inc. 2022 Equity Incentive Plan (incorporated by reference to Exhibit 10.7 to the Company's Current 10.2 Report on Form 8-K (File No. 001-41314) filed with the SEC on September 14, 2022) 10.3 Amprius Technologies, Inc. 2022 Employee Stock Purchase Plan (incorporated by reference to Annex E of the Company's proxy statement/prospectus filed with the SEC on September 1, 2022) 10.4 Amprius Technologies, Inc. Outside Director Compensation Policy (incorporated by reference to Exhibit 10.9 to the Company's Current Report on Form 8-K (File No. 001-41314) filed with the SEC on September 14, 2022)

10.5 Amprius Technologies, Inc. Executive Incentive Compensation Plan (incorporated by reference to Exhibit 10.10 to the Company's Current Report on Form 8-K (File No. 001-41314) filed with the SEC on September 14, 2022)

II-1

Exhibit Number	Description		
10.6	Amprius Technologies, Inc. 2016 Equity Incentive Plan and forms of agreements thereunder (incorporated by reference to Exhibit 10.11 to the Company's Current Report on Form 8-K (File No. 001-41314) filed with the SEC on September 14, 2022)		
10.7	Amprius Technologies, Inc. Form of Indemnification Agreement (incorporated by reference to Exhibit 10.12 to the Company's Registration Statement on Form S-4 (File No. 333-265740) filed with the SEC on August 9, 2022)		
10.8	Confirmatory Employment Letter with Dr. Kang Sun (incorporated by reference to Exhibit 10.3 to the Company's Current Report on Form 8-K (File No. 001-41314) filed with the SEC on September 14, 2022)		
10.9	Confirmatory Employment Letter with Sandra Wallach (incorporated by reference to Exhibit 10.4 to the Company's Current Report on Form 8-K (File No. 001-41314) filed with the SEC on September 14, 2022)		
10.10	Amended and Restated Confirmatory Employment Letter with Jonathan Bornstein (incorporated by reference to Exhibit 10.10 to the Company's Registration Statement on Form S-1 filed with the SEC on September 30, 2022)		
10.11	Amended and Restated Confirmatory Employment Letter with Dr. Ionel Stefan (incorporated by reference to Exhibit 10.11 to the Company's Registration Statement on Form S-1 filed with the SEC on September 30, 2022)		
10.12†	Lease, dated January 30, 2019, by and between Los Altos Fields, LLC and Amprius, Inc. (incorporated by reference to Exhibit 10.12 to the Company's Current Report on Form 8-K (File No. 001-41314) filed with the SEC on September 14, 2022)		
10.13	Assignment of Lease, dated May 1, 2022, by and between Amprius, Inc. and Legacy Amprius (incorporated by reference to Exhibit 10.13 to the Company's Current Report on Form 8-K (File No. 001-41314) filed with the SEC on September 14, 2022)		
10.14	Form of Subscription Agreement (incorporated by reference to Exhibit 10.1 to the Company's current report on Form 8-K (File No. 001-41314) filed with the SEC on September 7, 2022)		
10.15†	Common Stock Purchase Agreement, dated September 27, 2022, by and between the Company and BRPC II (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K (File No. 001-41314) filed with the SEC on September 28, 2022)		
10.16	Registration Rights Agreement, dated September 27, 2022, by and between the Company and BRPC II (incorporated by reference to Exhibit 10.2 to the Company's Current Report on Form 8-K (File No. 001-41314) filed with the SEC on September 28, 2022)		
21.1	List of Subsidiaries (incorporated by reference to Exhibit 21.1 to the Company's Registration Statement on Form S-1 filed with the SEC on September 30, 2022)		
23.1	Consent of SingerLewak LLP		
23.2*	Consent of Wilson Sonsini Goodrich & Rosati, P.C. (included in Exhibit 5.1 hereto)		
24.1*	Power of Attorney (included in the signature page to this Registration Statement on Form S-1)		
101.CAL	XBRL Taxonomy Extension Calculation Linkbase Document		
101.SCH	XBRL Taxonomy Extension Schema Document		
101.DEF	XBRL Taxonomy Extension Definition Linkbase Document		
101.LAB	XBRL Taxonomy Extension Labels Linkbase Document		
101.PRE	XBRL Taxonomy Extension Presentation Linkbase Document		

II-2

Exhibit Number	Description
104	Cover Page Interactive Data File (formatted as Inline XBRL and contained in Exhibit 101)
107*	Filing Fee Table

* Previously filed.

+ Certain schedules and exhibits have been omitted in accordance with Regulation S-K Item 601(a)(5). A copy of any omitted schedule or exhibit will be finished to the SEC upon request.

SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, as amended, the registrant has duly caused this registration statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the city of Fremont, California, on December 27, 2022.

AMPRIUS TECHNOLOGIES, INC.

By: /s/ Dr. Kang Sun

Name: Dr. Kang Sun Title: Chief Executive Officer

Pursuant to the requirements of the Securities Act of 1933, as amended, this registration statement on Form S-1 has been signed by the following persons in the capacities and on the dates indicated:

Signature	Title	Date
/s/ Dr. Kang Sun Dr. Kang Sun	Chief Executive Officer and Director (Principal Executive Officer)	December 27, 2022
/s/ Sandra Wallach Sandra Wallach	Chief Financial Officer (Principal Financial and Accounting Officer)	December 27, 2022
* Donald R. Dixon	Director	December 27, 2022
* Dr. Steven Chu	Director	December 27, 2022
* Dr. Wen Hsieh	Director	December 27, 2022
* Justin Mirro	Director	December 27, 2022
* By: /s/ Dr. Kang Sun		

Name: Dr. Kang Sun Title: Attorney-in-Fact

II-4

Consent of Independent Registered Public Accounting Firm

We consent to the use in this Amendment No. 3 to the Registration Statement (No. 333-267691) on Form S-1 of Amprius Technologies, Inc. of our report dated June 21, 2022 (except for the reverse recapitalization described in Note 1 as to which the date is November 16, 2022), relating to the financial statements of Amprius Technologies, Inc., appearing in the Prospectus, which is part of this Registration Statement.

We also consent to the reference to our firm under the heading "Experts" in such Prospectus.

/s/ SingerLewak LLP

San Jose, California December 27, 2022