

**IN THE UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF COLORADO**

ALLIANCE FOR SUSTAINABLE  
ENERGY, LLC,

Plaintiff,

v.

CANADIAN SOLAR INC.,

Defendant.

Case No. 1:23-cv-3338

**COMPLAINT FOR PATENT  
INFRINGEMENT**

**DEMAND FOR JURY TRIAL**

ALLIANCE FOR SUSTAINABLE ENERGY, LLC, (“Alliance” or “Plaintiff”) by and through its attorneys, alleges as follows:

**NATURE OF THE ACTION**

1. This is a civil action for patent infringement under the patent laws of the United States, 35 U.S.C. § 1 *et seq.*

2. Defendant Canadian Solar Inc. (“Canadian Solar” or “Defendant”) has infringed, and continues to infringe, one or more claims of Alliance’s U.S. Patent No. 8,075,792 (the “’792 Patent”), at least by making, using, offering to sell, and/or selling the infringing products, which are identified in the paragraphs below, in the United States.

**THE PARTIES**

3. Plaintiff is a Delaware corporation with its principal place of business at 15013 Denver West Parkway, Golden, CO 80401.

4. Upon information and belief, Canadian Solar is a Canadian corporation, with its U.S. Regional Headquarters located at 1350 Treat Blvd, Ste. 500 Walnut Creek, CA 94597.

## JURISDICTION AND VENUE

5. This is a civil action for patent infringement arising under the patent laws of the United States, Title 35 of the United States Code.

6. This Court has subject matter jurisdiction over the matters asserted herein under 28 U.S.C. §§ 1331 and 1338(a).

7. This Court has personal jurisdiction over Canadian Solar, who has conducted and does conduct business within the State of Colorado and within this judicial district. Canadian Solar, directly or through intermediaries, makes, distributes, offers for sale or license, sells or licenses, and advertises its products in the United States, the State of Colorado, and the District of Colorado. For example, on information and belief, Canadian Solar supplied solar modules for a project in this District. <https://www.power-technology.com/projects/bighorn-solar-project-colorado/> (last accessed December 18, 2023). Canadian Solar is also a member of the Colorado Solar and Storage Association, through which, on information and belief, it offers to sell and/or sales the Accused Products. <https://cossa.co/member-directory-old/solar-manufacturers/> (last accessed December 18, 2023). Canadian Solar also knowingly places products into the stream of commerce with the intent that such products are sold in and used in Colorado. <https://www.solar-electric.com/learning-center/photographer-thrives-with-renewable-solar-energy-in-colorado/> (last accessed December 18, 2023).

8. Venue is proper in this judicial district under 28 U.S.C. § 1391 because Defendant is not a resident in the United States and thus may be sued in any judicial district. *In re HTC Corp.*, 889 F.3d 1349, 1356 (Fed. Cir. 2018).

**ALLIANCE’S INNOVATIVE TECHNOLOGY**

9. A solar cell, or photovoltaic cell (“PV cell”), is an electrical device that converts the energy of light directly into electricity by the photovoltaic effect. The photovoltaic effect is the generation of voltage and electric current in a material upon exposure to light.

10. A PV cell comprises semiconductor material. Silicon is the most common semiconductor material used in solar cells. Crystalline silicon cells are made of silicon atoms connected to one another to form a crystal lattice. This lattice provides an organized structure that makes conversion of light into electricity more efficient.

11. When the semiconductor is exposed to light, it absorbs the light’s energy and transfers it to negatively charged particles in the material called electrons. This extra energy allows the electrons to flow through the material as an electrical current.

12. The efficiency of a PV cell is the amount of electrical power coming out of the cell compared to the energy from the light shining on it. Reflection of incident light reduces the efficiency of PV cells.

13. Texturing the silicon surfaces of a PV cell is a technique that is used to suppress reflectivity and, therefore, improve the efficiency of the PV cell. Highly textured “black silicon” surfaces exhibit very low reflectivity and high efficiency.

14. Alliance is the management and operating contractor for the National Renewable Energy Laboratory (“NREL”) in Golden, Colorado. Alliance has a multiple decade history of successfully managing and operating NREL, and takes pride in the Laboratory’s continued successful delivery of energy efficiency and renewable energy mission outcomes for the Department of Energy and the nation. Alliance is recognized worldwide for its cutting-edge and innovative research in sustainable energy, including solar power and related technologies.

15. Alliance has conducted research into methods of producing black silicon solar cells having low reflectivity and high photovoltaic efficiency. Alliance's research has produced a number of innovative technologies relating to black silicon, including the methods claimed in the '792 Patent.

### **THE PATENTS-IN-SUIT**

#### **A. The '792 Patent**

16. Plaintiff is the owner by assignment of the '792 Patent.

17. The '792 Patent, entitled "Nanoparticle-based etching of silicon surfaces," was duly and legally issued on December 13, 2011. A true and correct copy of the '792 Patent is attached as Exhibit A.

18. The '792 Patent describes a method of texturing or black etching a silicon surface, such as a silicon wafer.

19. The '792 Patent claims, among other things,

a. Claim 1:

1. A method of texturing a silicon surface, comprising:  
positioning a substrate with a silicon surface in a vessel;  
filling the vessel with a volume of an etching solution that covers the silicon surface of the substrate, wherein the etching solution comprises a catalytic nanomaterial and a oxidant-etchant solution comprising an etching agent and a silicon oxidizing agent; and  
etching the silicon surface by agitating the etching solution in the vessel.

b. Claim 10:

10. A method of reducing reflectivity of a silicon surface, comprising:  
providing a silicon surface;  
positioning a plurality of nanoparticles of a catalytic material proximate to the silicon surface;  
soaking the silicon surface and the nanoparticles in a bath of oxidant-etchant solution;  
agitating the oxidant-etchant solution until the silicon surface is etched to have a texture that reduces reflectivity of the etched silicon surface; and  
removing the nanoparticles from the etched silicon surface with a stripping solution.

c. Claim 17:

17. A method of texturing a silicon wafer, comprising:  
placing the silicon wafer in a container;  
providing a volume of solution including metal nanoparticles in the container;  
providing a volume of oxidant-etchant solution in the container, wherein the oxidant-etchant solution comprises an etching agent and an oxidizing agent;  
agitating the nanoparticle solution and the oxidant-etchant solution in the container until a surface of the silicon wafer becomes etched to have a reflectance of less than about 15 percent; and  
removing the metal nanoparticles from the etched surface of the silicon wafer.

### **DEFENDANT'S ACTIVITIES**

#### **A. Canadian Solar Steals the Patented Methods**

20. In 2017, after the issuance and priority dates of the Patents-in-Suit, Canadian Solar researchers published a paper entitled “19.31%-efficient multicrystalline silicon solar cells using MCCE black silicon technology.” *See* Zou, Shuai, et al., “19.31%-efficient multicrystalline silicon solar cells using MCCE black silicon technology,” *Photovoltaics International* (2017) (the “Zou 2017 Paper”). A copy of the Zou 2017 Paper is attached as Exhibit B to this Complaint. The paper was submitted to the 2017 EU Photovoltaics-Specialist Conference.

21. The Zou 2017 Paper cites to a previous publication written by inventors of the Patents: Oh, J., Yuan, HC. & Branz, H., “An 18.2%-efficient black-silicon solar cell achieved through control of carrier recombination in nanostructures,” *Nature Nanotech* 7, 743–748 (2012) (the “Branz 2012 Paper”). A copy of the Branz 2012 Paper is attached as Exhibit C to this Complaint. The Branz 2012 Paper notes the promising nature of the authors’ research.

22. On May 12, 2017, Alliance sent a notification letter to Defendant identifying the ’792 Patent and notifying Defendant of the potential infringement. A true and correct copy of the May 12, 2017 letter is attached as Exhibit D.

23. On June 9, 2017, Alliance sent a second notification letter to Defendant regarding the potential infringement. A copy of the June 9, 2017 letter is attached as Exhibit E.

24. Defendant failed to respond to either the May 12, 2017 letter or the June 9, 2017 letter.

25. Subsequent to its receipt of the 2017 letters, Canadian Solar manufactured solar panels that include black silicon technology, and sold black silicon panels within the United States.

26. On or about April 28, 2020, Canadian Solar filed a Form 20-F with the U.S. Securities and Exchange Commission. A true and correct copy of the Form 20-F is attached as Exhibit F. In this filing, Canadian Solar represented to the SEC that “[w]e have completed commercializing our in-house developed black silicon technology on multi wafers. . . . All of the P4 and P5 production capacity is equipped with our black silicon technology.” *See* Exhibit F at 85.

27. Publicly available documents indicate that Canadian Solar manufactures its black silicon solar panels using a MCCE method that infringes one or more claims of the ’792 Patent.

For example, an academic journal article entitled “18.45%-Efficient Multi-Crystalline Silicon Solar Cells with Novel Nanoscale Pseudo-Pyramid Texture,” authored by Canadian Solar employees Xiaoya Ye and Shuai Zou (“Ye et al.”), describes the production method in detail. A copy of Ye et al. is attached as Exhibit G.

28. A copy of the Supplemental Information appendix published by Ye et al., which provides additional detail regarding the production method, is attached as Exhibit H.

29. As shown in the claim charts attached as Exhibit I to this complaint, Canadian Solar’s manufacturing process practices at least claims 1, 10, and 17 of the ’792 Patent.

### **B. Canadian Solar’s Infringing Products**

30. Defendant manufactures multiple product lines of black silicon solar panels, including KuBlack High Efficiency Mono Perc Modules (CS3K-300MS, CS3K-305MS, CS3K-310MS, and CSK3K-315MS), HiDM-Black All-Black High Density Mono Perc Modules (CS1H-320MS, CS1H-325MS, CS1H-330MS, CS1H-335MS, and CS1H-340MS), HiDM5 (All-Black) All-Black High Density Mono Perc Modules (CS1Y-390MS, CS1Y-395MS, CS1Y-400MS, and CS1Y-405MS), BiHiKu Super High Power Bifacial Mono Perc Modules (CS3W-420MB, CS3W-425MB, CS3W-430MB, CS3W-435MB, CS3W-440MB, and CS3W-445MB), and HiKuBlack Black Frame on Black Backsheet Mono Perc Modules (CS3N-380MS, CS3N-385MS, CS3N-390MS, CS3N-395MS, and CS3N-400MS) (collectively, the “Infringing Products”).

31. On information and belief, Defendant produces the Infringing Products using the patented methods of the ’792 Patent.

32. On information and belief, Defendant has purposefully, actively, and voluntarily distributed its infringing products produced by Plaintiff's patented methods with the expectation that they will be purchased or used by consumers in the District of Colorado.

33. By purposefully and voluntarily distributing one or more of its infringing products, Defendant has injured Plaintiff and is thus liable to Plaintiff for infringement of the Patents pursuant to 35 U.S.C. § 271.

**COUNT I**  
**(Infringement of the '792 Patent)**

34. Plaintiff incorporates each preceding paragraph herein by reference.

35. Plaintiff is the owner of the entire right, title, and interest in and to the '792 Patent.

36. Defendant actively and knowingly has infringed and is infringing the '792 Patent with knowledge of Plaintiff's patent rights and without reasonable basis for believing that Defendant's conduct is lawful. Defendant's acts of infringement have been and continue to be willful, deliberate, and in reckless disregard of Plaintiff's patent rights. Defendant is thus liable to Plaintiff for infringement of the '792 Patent pursuant to 35 U.S.C. § 271.

37. As a non-limiting example, as shown in the claim chart attached as Exhibit I, Defendant produces the Infringing Products using a manufacturing process that infringes at least claims 1, 10, and 17 of the '792 Patent. This description is based on publicly available information. Alliance reserves all rights to modify this description, including, for example, on the basis of information about Defendant's products and methods of manufacture Alliance obtains during discovery.

**JURY TRIAL DEMAND**

38. Plaintiff hereby demands a trial by jury on all issues so triable.



**PRAYER FOR RELIEF**

WHEREFORE, Plaintiff requests that a judgment be granted in its favor and against Defendant, and that this Court grant Plaintiff the following relief:

A. Entry of judgment holding Defendant liable for infringement of the patents at issue in this litigation;

B. An order permanently enjoining Defendant, its officers, agents, servants, employees, attorneys and affiliated companies, its assigns and successors in interest, and those persons in active concert or participation from it, from continued acts of infringement of the patents at issue in this litigation;

C. An order granting Plaintiff damages according to proof resulting from Defendant's infringement of the patents at issue in this litigation, together with prejudgment and post-judgment interest;

D. An order awarding Plaintiff its costs and attorney's fees under 35 U.S.C. § 285; and

E. Any and all other legal and equitable relief as may be available under law and which the court may deem proper.

Dated: December 19, 2023

Respectfully submitted,

By: /s/ Dustin L. Taylor

**HUSCH BLACKWELL LLP**

Dustin L. Taylor (CO #54463)  
dustin.taylor@huschblackwell.com  
1801 Wewatta Street, Suite 1000  
Denver, CO 80202  
303-749-7200 Telephone

Rudolph A. Telscher, Jr.\*

rudy.telscher@huschblackwell.com  
Eric J. Rakestraw\*  
eric.rakestraw@huschblackwell.com  
8001 Forsyth Blvd, Suite 1500  
St. Louis, MO 63105  
314-3800-1500 Telephone

**THE SIMON LAW FIRM, P.C.**

Anthony G. Simon\*  
asimon@simonlawpc.com  
Jeremiah Nixon\*  
jnixon@simonlawpc.com  
800 Market St., Suite 1700  
St. Louis, MO 63101  
314-241-2929 Telephone

*\*Pro Hac Vice forthcoming*

***Attorneys for Plaintiff Alliance for  
Sustainable Energy, LLC***