

# Cool Prize

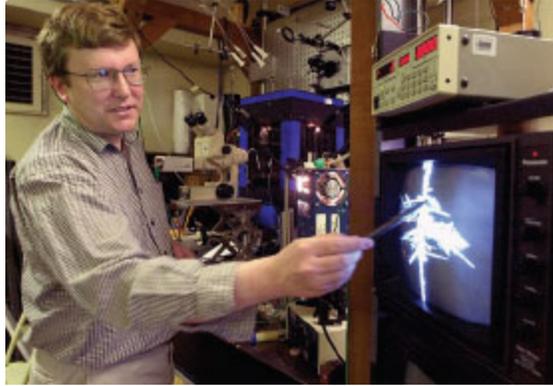
***WR News* talks to an award-winning snowflake expert.**

Most people prefer to stay indoors during a snowstorm, but Kenneth Libbrecht is not most people. When flurries start drifting down from the winter sky, the scientist's work begins. Armed with a magnifying glass, a paintbrush, and a camera, he heads out into the cold.



*Kenneth Libbrecht*

There, Libbrecht waits for the picture-perfect snowflakes. Sometimes he waits for hours. Finally, the scientist spots what he's been looking for — beautiful, glittering ice crystals. As the shiny snowflakes fall, Libbrecht carefully catches them on his paintbrush. Then he sets the specks of ice on a cardboard backdrop. He points his camera and shoots.



*AP Images*

Kenneth Libbrecht studies a snowflake in his lab.

Libbrecht's sparkling photos have earned the expert the 2010 Lennart Nilsson Award. The honor is given to science and medical photographers around the world.

The scientist recently traveled to Stockholm, Sweden, to claim his award. "Kenneth Libbrecht's images open our eyes to the ... beauty of nature," say members of the awards committee. "With his photographs of snowflakes, [Libbrecht] turns mathematics [and science] into images of great beauty."

## Winter Wonders

Libbrecht takes snapshots of both real and **artificial** snowflakes to learn more about how they get their shapes. Something that is artificial is fake.

Snowflakes form when **water vapor**, or steam, in clouds freezes. Frozen pieces of hydrogen and oxygen stick together to form **hexagons**. Those are six-sided shapes. Every snowflake is a hexagon. However, no two snowflakes have the same shape. Experts are not sure why. Libbrecht hopes he can solve the mystery with his camera.

"Right now, we don't really understand [how the ice crystals] grow," Libbrecht told *WR News*. "It's somewhat **intriguing** [or interesting] why they have the shapes they do."

What experts *do* know is a snowflake's appearance depends on certain weather conditions, such as temperature and humidity. The best-looking ice crystals form in 5 to 10 degrees Fahrenheit, Libbrecht explains. Those are the snowflakes he tries to capture with his camera.

"I'm always looking for just the right temperature," he says. "I'm looking for places that are cold and snow a lot."

## Snow Days

Libbrecht has traveled the world in search of such places. He has taken photos of snowflakes in Alaska, Vermont, Canada, and even areas within the chilly Arctic Circle.

The work takes patience, Libbrecht explains. "It doesn't snow all the time, and when it does, the crystals aren't always good," he says.

Besides snapping pictures, Libbrecht also takes careful measurements of snowflakes. Once he's collected enough data, he returns to his lab in California to review his research. There, he compares his snowflake pictures with the artificial ice crystals he grows.

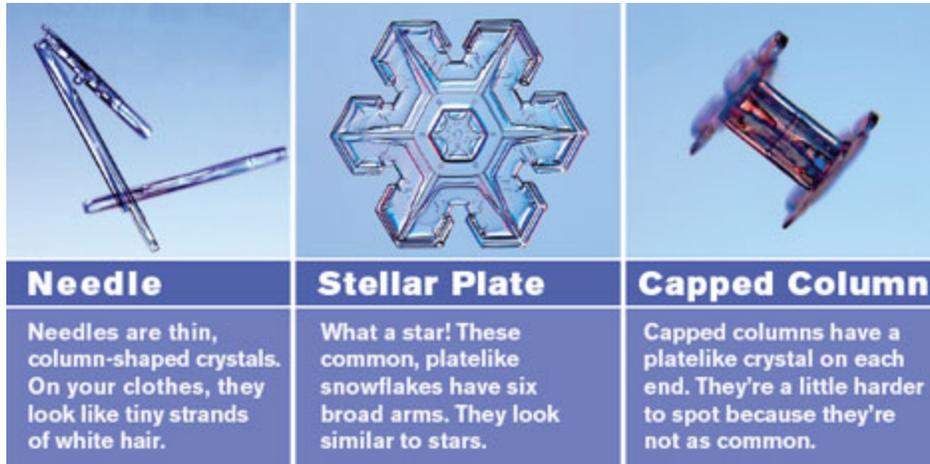
Since developing his interest in snowflakes, Libbrecht has taken about 10,000 images. This winter he plans to hunker down in the lab to study what he's gathered so far.

The scientist's snowy, outdoor adventures are far from over, though. Libbrecht hopes to one day photograph ice crystals in Siberia. The northern Asian region is one of the coldest places on the planet.

"I really enjoy going out and watching the snow fall and trying to see what I can find," he says. "It's a bit of a treasure hunt."

## Frosted Flakes

Watch for some of these types of snowflakes the next time you walk through a winter wonderland.



*Kenneth Libbrecht*

## Meet the Snow Man

Scientist Kenneth Libbrecht has a (snow) ball when flurries start to fall! Read to learn more about the scientist's snowy work.



*Kenneth Libbrecht*

**WR News:** Have you always been interested in snowflakes?

**Kenneth Libbrecht:** I grew up in North Dakota, so I did have some fondness of snow.

**WR:** What is your process for photographing ice crystals?

**KL:** When I find a good one, I'll [catch it] using a paintbrush. I then stick it under my microscope and take a picture. I repeat this hundreds of times!

**WR:** What advice do you have for kids who want to study snowflakes?

**KL:** You don't need a lot of fancy equipment. With a simple magnifying glass on a snowy day, you can really see quite a bit if you just stop and look.

Name: \_\_\_\_\_ Date: \_\_\_\_\_

1. According to the passage, which of the following statements is true?
  - A All snowflakes are heptagons because they have 7 sides.
  - B The best looking snowflakes form at 32 degrees Fahrenheit.
  - C Needle snowflakes are sharp and can be dangerous to the touch.
  - D Capped column snowflakes are hard to spot because they are uncommon.
  
2. Which sequence of steps *describes* Libbrecht's process for photographing snowflakes?
  - A spot a snowflake with a magnifying glass, catch it on a paintbrush, put it under a microscope and take a picture
  - B make a snowflake in a lab, examine it with a magnifying glass, count the sides and take a picture
  - C open a cooler to catch snowflake, choose the best samples, put on a cardboard piece and take a picture
  - D look for snowflakes with a telescope, collect samples using ice cubes, arrange flakes by type and take a picture
  
3. What words could be used to best describe Kenneth Libbrecht?
  - A careful, patient and determined
  - B smart, lazy and fearful
  - C artistic, detailed and intelligent
  - D strong, natural and scientific

4. Read the sentence.

Kenneth Libbrecht explains that since he grew up in North Dakota he had a **fondness** for snow when asked whether he had always been interested in snowflakes.

In this sentence **fondness** means

- A sadness
  - B fear
  - C dislike
  - D love
  
5. The primary purpose of this passage is to describe
  - A where snowflakes are all alike
  - B how Kenneth Libbrecht studies snowflakes
  - C why snowflakes are not interesting to scientists
  - D what artificial snowflakes can do to help cool hot places

6. What tools does Kenneth Libbrecht use to complete his work?

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7. How might growing artificial snowflakes help Libbrecht learn about how snowflakes get their shapes?

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8. The question below is an incomplete sentence. Choose the answer that best completes the sentence.

Photographing ice crystals takes patience \_\_\_\_\_ sometimes it takes hours to find picture-perfect snowflakes and you must repeat it hundreds of times.

- A if
- B because
- C although
- D but

9. Read the following sentence.

During a snowstorm in cold places such as Alaska and Vermont, Kenneth Libbrecht goes outside to study ice crystals.

Answer the following questions based on the information provided in the sentence you just read. One of the questions has already been answered for you.

Who is the main subject of this sentence? Kenneth Libbrecht

What does Kenneth Libbrecht do? \_\_\_\_\_

When? \_\_\_\_\_

Where? \_\_\_\_\_

Why? \_\_\_\_\_

**10. Vocabulary Word:** appearance (*noun*): the way something or someone looks on the outside.

Use the vocabulary word in a sentence: \_\_\_\_\_

\_\_\_\_\_

## Teacher Guide &amp; Answers

**Passage Reading Level:** Lexile 840

**Featured Text Structure:** Descriptive – the writer explains, defines or illustrates a concept or topic

**Passage Summary:** “Cool Prize” describes the work of Kenneth Libbrecht, a scientist that photographs and studies snowflakes. Detailed information about snowflakes is provided as well as a brief interview with Libbrecht.

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  - C Needle snowflakes are sharp and can be dangerous to the touch.
  - D **Capped column snowflakes are hard to spot because they are uncommon.**
2. Which sequence of steps *describes* Libbrecht’s process for photographing snowflakes?
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  - A where snowflakes are all alike
  - B **how Kenneth Libbrecht studies snowflakes**
  - C why snowflakes are not interesting to scientists
  - D what artificial snowflakes can do to help cool hot places

6. What tools does Kenneth Libbrecht use to complete his work?

**Suggested answer:** Kenneth Libbrecht uses a magnifying glass, a paintbrush and a camera to photograph snowflakes.

7. How might growing artificial snowflakes help Libbrecht learn about how snowflakes get their shapes?

**Suggested answer:** By growing his own artificial snowflakes, he might make predictions about real snowflakes and how they are formed. Since he compares the pictures of real snowflakes with his artificial ones, he might be looking for similar patterns.

8. The question below is an incomplete sentence. Choose the answer that best completes the sentence.

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- A if
- B because**
- C although
- D but

9. Read the following sentence.

During a snowstorm in cold places such as Alaska and Vermont, Kenneth Libbrecht goes outside to study ice crystals.

Answer the following questions based on the information provided in the sentence you just read. One of the questions has already been answered for you.

Who is the main subject of this sentence? Kenneth Libbrecht

What does Kenneth Libbrecht do? **goes outside**

When? **during a snowstorm**

Where? **in cold places such as Alaska and Vermont**

Why? **to study ice crystals**

10. **Vocabulary Word:** appearance (*noun*): the way something or someone looks on the outside.

Use the vocabulary word in a sentence: answers may vary.