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We will start momentarily at 2pm ET



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Have Questions?



Use the Questions Box!



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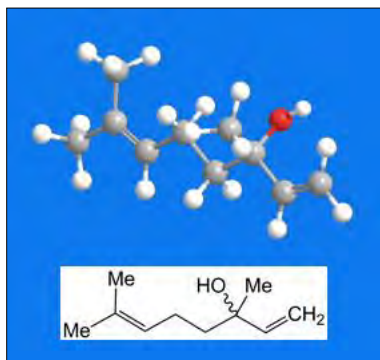


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Molecule of the Week



I may be more than just a pretty scent.

What molecule am I?

Visit www.acs.org to find out!

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Food Chemistry Series



The Chemistry of Yummy!



From Cocoa Buds to Taste Buds – The Chocolate Process and Sensory Experience

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Upcoming ACS Webinars™

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Thursday April 26, 2012

Madness of King George

Martin Warren, University of Kent, UK.



Thursday May 3, 2012

Challenges of Scaling a Global Biomaterials Supply Chain

Blake Mosher, Sharon Feng.

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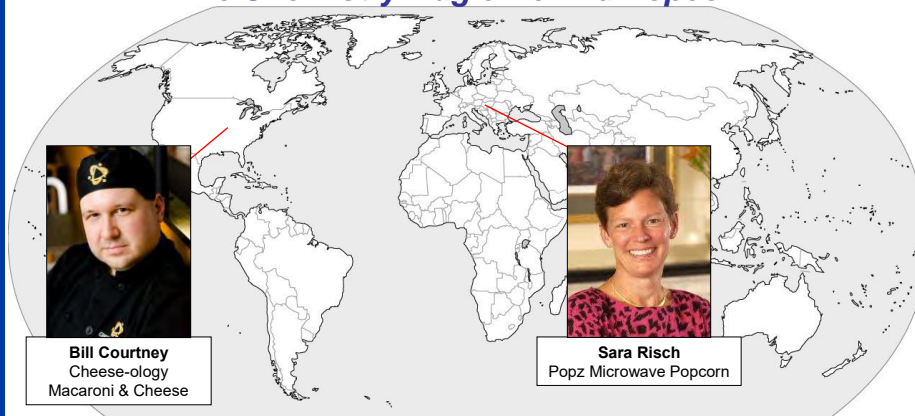
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ACS WEBINARS™

April 19, 2012



The Chemistry Magic Behind Popcorn



Bill Courtney
Cheese-ology
Macaroni & Cheese



Sara Risch
Popz Microwave Popcorn

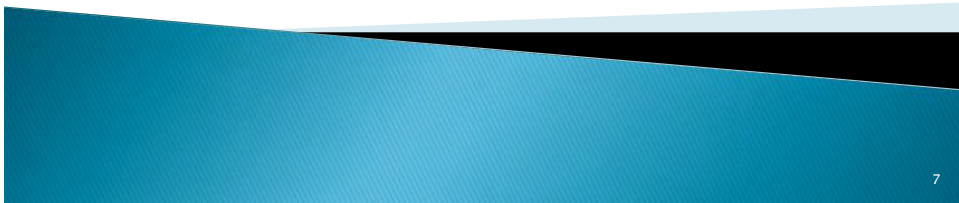
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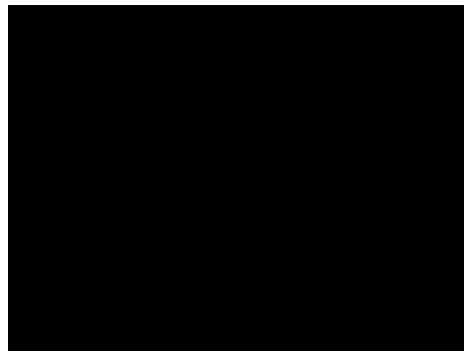
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The Magic of Popcorn

Sara J. Risch, Ph.D.
Popz Europe Kft.



Popcorn's poof



Popcorn.org
<http://www.popcorn.org/ForTeachers/TeachingGuide/PopVideos/tabid/89/Default.aspx>



▶ No, it is
CHEMISTRY



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**What is the ideal moisture content
for popcorn to pop?**

- ▶ 1. 2 - 3%
- ▶ 2. 13 - 14%
- ▶ 3. 23 - 24%
- ▶ 4. 35 - 36%
- ▶ 5. 50 - 51%



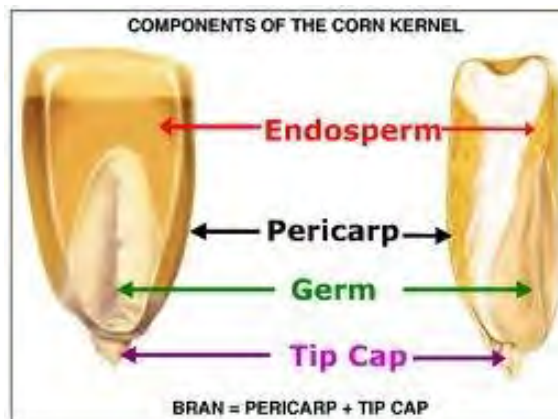
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Types of Corn - *Zea mays*

- ▶ Main types
 - Field (dent)
 - Sweet
 - Popcorn
 - *Zea mays everta*
- ▶ Minor types
 - Flint
 - Flour
 - Pod



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Popcorn

- ▶ Pericarp
 - Hard shell
- ▶ Endosperm
 - Mostly hard, glassy starch
 - Small portion of soft starch



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What Makes Popcorn Pop?

- ▶ Steam!
- ▶ Temperature reaches boiling point
 - Water in kernel turns to steam
- ▶ Continues heating to about 347 F (175 C)
- ▶ Soft starch
 - Gelatinous
 - Expands when pericarp bursts
 - Amorphous



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What pressure is reached inside the popcorn kernel before it pops?

- ▶ 1. 10 psi (69 kPa)
- ▶ 2. 45 psi (310 kPa)
- ▶ 3. 74 psi (517 kPa)
- ▶ 4. 135 psi (930 kPa)
- ▶ 5. 160 psi (1103 kPa)



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Pressure

- ▶ 135 psi
- ▶ Popcorn expands 40 – 50 times the size of the original kernel



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Two shapes of popcorn Butterfly and mushroom



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Nutrition

- ▶ Good source of fiber
- ▶ Low fat
- ▶ Packed with antioxidants



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Antioxidants

- ▶ “Popcorn may be the perfect snack food.”
- ▶ “It’s the only snack that is 100 percent whole grain.”
- ▶ Contains more antioxidants than a day’s worth of fruits or vegetables
- ▶ Highest concentration is in the hull

- Joe Vinson,
- University of Scranton in Pennsylvania
- Presented at ACS meeting March 2012



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Microwave popcorn

- ▶ Utilizes special package
 - Metalized polyester film
 - Enhances popping performance
 - Hybrids developed specifically for microwave
- ▶ Unique challenge for flavors
 - Steam distillation



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Which of the following do you think would be the best flavour for popcorn?

- ▶ Sour cream and dill
- ▶ Butter
- ▶ Barbecue
- ▶ Cheese
- ▶ Salt



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Regional preferences

- ▶ Salt and butter world-wide
- ▶ United States
 - Butter
- ▶ Scandinavia
 - Salt
- ▶ Germany and UK
 - Sweet
- ▶ China
 - Fruit flavors



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Resources

- ▶ Popcorn Board
 - www.popcorn.org

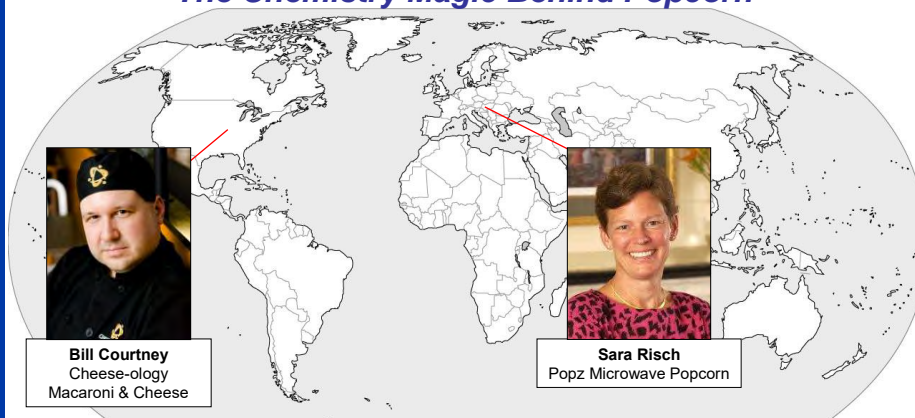


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