Perspective: Safety Culture

Ron Zuckermann

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Shaken, not stirred: Collapsing a peptoid monolayer to produce free-floating, stable nanosheets

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KEYWORDS

Supported planar monolayers, peptoid monolayer, free-floating nanosheets, dynamic assembly, stable nanomaterials

ABSTRACT

That a novel technique for forming stable planar nanosheets that have potential applications in spintronics (e.g., graphene), nanoelectronics, and nanoelectromechanical systems is described. The technique uses an engineered peptoid monolayer that undergoes a thermodynamic cycle that collapses the monolayer into a more stable structure. This technique allows for the formation of monolayers into nanostructures.
Profiles in Safety: Materials Scientist Ron Zuckerman

Maintaining a culture of safety can be a challenge in a large multidisciplinary laboratory. Not only does it perform its own research but also as a busy User Facility, where each week brings a new crop of scientists from around the world. Ron Zuckerman, Director of the Biological Nanostructures Facility at the Molecular Foundry, meets face-to-face with every new staff member and visiting User—to welcome them when they arrive, discuss the work they plan to do, and emphasize safety practices specifically related to their work.

It is a session distinct from the job hazards analysis and on-the-job training that each person receives. “The goal of this 10- to 15-minute meeting is to make a personal connection, open a channel for communication, and get their buy-in to the safety culture,” Zuckerman explains. He makes it clear that anyone can come to him if they do not feel safe, and he welcomes discussion, even to hear complaints that a safety procedure seems too time-consuming or even unnecessary. So his door remains open to everyone in the Facility.

During the short orientation meeting, Zuckerman also takes a photograph of each person and has it added to the display board in the hallway within hours. “That way, each person knows who everyone else is and feels part of the group,” he says. “Whether first-year students or renowned professors, they see that they have a responsibility to participate equally with regard to safety.”

Zuckerman vastly prefers this participatory approach to delivering threats and warnings against breaking rules. “We welcome people and show that, with simple precautions, we can keep this great thing going: conducting world-class research and meeting the Users’ needs in a safe and beautiful facility.”
Safety orientations (over 200!)

Link to movie version (Quicktime 4.5 MB): files.me.com/peptoids/ql1n9v.mov
Simple objective

- Productivity
- Downside risk
- Effort
- Anxiety
1. People are fallible, and even the best people make mistakes.

2. Error-likely situations are predictable, manageable, and preventable.

3. Individual behavior is influenced by organizational processes and values.

4. People achieve high levels of performance largely because of the encouragement and reinforcement received from leaders, peers, and subordinates.

5. Events can be avoided through an understanding of the reasons mistakes occur and application of the lessons learned from past events (or errors).

http://www.hss.doe.gov/sesa/corporatesafety/hpc/principles.html
Sending probes into the unknown

The “Program”

1. Think for themselves
2. Act safely & responsibly
3. Tell me concerns/near misses/issues
4. Communicate with everyone
5. Be fully engaged
6. Want to go the extra mile
7. Be self-motivated
8. Be helpful to everyone
9. “Follow the rules”
How to achieve this?

• Up-front investment with every person
• Create a culture that fosters intrinsic motivation
• Safety culture \(\iff\) Organizational culture
• Culture is a “construct” that we create/invent
Each person is unique – or are they?

People’s basic/shared needs:

- To feel part of a community
- To be engaged in meaningful work
- To do something personally challenging on many levels
- To accomplish something
- To do something for the greater good
- To feel listened to, have some influence
- To have autonomy/empowerment to direct themselves
- To be treated with respect, valued
- The community is desirable and “easy” to join
- To feel safe (not attacked)
- Activation barriers to talk to people is low
- To be inspired by those around us
Prof. Abraham Maslow (1908 - 1970)

Hierarchy of Needs

Self-Determination Theory

Motivation

Intrinsic
- inherently satisfying
- captivating/engaging

Extrinsic
- to obtain an external goal
- achieve an external reward

Three fundamental needs:

Competence

Relatedness

Autonomy

Initial Safety Orientation

- Formal scheduled appointment
- Go over list of important stuff

1. Get background info
2. Project area/facility usage
3. Previous training
4. ISM/line management
5. Risk assessment
6. Hazards in the work
7. Chemical Management System
8. JHA/work description/work authorization
9. AHD/BUR/BUA/LAS
10. On the Job Training (OJT)
11. Equipment training
12. Other floor access
13. Work Alone Policy
14. Contact info/photo
15. Cardkey access, mailing lists
Initial Safety Orientation

- What are they really going to walk away with?
- Establish the proper “stance” right off the bat

- Establish that I am in charge and that I care about safety
- Open a communication channel
- Make them calm, not anxious so they can open up
- Get them talking, show that I can listen
- Build trust
- I care about what they say, who they are
- Describe the existing functioning community
- Welcome them to participate, not just “consume”
- Impress that they can play an important role
- Open-door policy
- Defining moment: posting of photo/contact info
  - Openness to being known in the community
  - Public posting of everyone’s pic and contact info
Photo board!
Communication Styles

- The Dominant Communicator
- The Passive Communicator
- The Passive-Aggressive Communicator
- The Empathetic Communicator

The Dominant Communicator

- Tend to “run people over” in conversations.
- Often believe they’re never wrong, their opinions are more important than those of others.
- People who disagree with them are either disloyal or misinformed.
- Can lead to:
  - Public criticism of others,
  - Blaming others when problems arise,
  - Act bossy and negative,
  - Lack of appreciation for the accomplishments of others,
  - Interrupt others, often finishing their sentences,
  - Dismiss new ideas without listening to the rationale,
- Effects on others:
  - Provokes fear, counter-control and alienation,
  - Fosters resistance, defiance, sabotaging, striking back, alliance formation, lying and covering-up behaviors.
- Damages culture and morale

The Passive Communicator

- Tends to be indirect, meek
- Believes you shouldn't express your true feelings, make waves or disagree with others
- Other people's opinions are more important than their own
- Can lead to:
  - remaining quiet, even when being treated unfairly,
  - asking for permission unnecessarily,
  - frequent complaining rather than acting,
  - delegating personal choice to others,
  - retreat from interpersonal conflict and accepting directions without question.
- Creates frustration and mistrust because of not knowing where they stand
- Hinders open communication

The Passive-Aggressive Communicator

- Tend to "go behind people's backs" instead of dealing with people directly
- Appear to agree with others when they really don't agree
- Often make sarcastic remarks and take subtle digs at others
- Hold grudges, value "getting even" and sabotage others
- Refuse to help others or give others "the silent treatment."

Can lead to:
- Increased factions and favoritism,
- Increased negative gossip,
- An environment of low interpersonal trust,
- Diminished job satisfaction, performance.

The Empathetic Communicator

- Focus on healthy, long-term relationships
- Belief that personal opinions and the opinions of others are important
- The process of coming to a decision – not just the outcome – is important
- Getting input from others boosts morale and generally leads to better decision making
- State realistic expectations instead of demands
- Can lead to:
  - Increase perception of autonomy or personal control,
  - Motivate people to achieve and "go beyond the call of duty",
  - Improved sense of appreciation and respect,
  - Increased levels of interpersonal trust, respect, honesty and openness.
- Enhanced organizational communication, higher morale and better performance.

Flow

Prof. Mihaly Csikszentmihalyi
Claremont Graduate Univ.

Conclusions

- Leverage the power of community
- Create culture with every new person
- Foster intrinsic motivation
- Pay attention to communication
Further reading


- **Maslow’s Hierarchy of Needs:**
  A. H. Maslow, “**A Theory of Human Motivation**”, *Psychological Review*, 50, 370 (1943)

- **Self-Determination Theory:**


- **Flow:**