

# Daniel Madrzykowski

Fire Protection Engineer, National Institute of Standards and Technology

## SPECIAL PRESENTATION



*Dan Madrzykowski is a Fire Protection Engineer with the National Institute of Standards and Technology. Dan earned his Masters of Science degree in Fire Protection Engineering from the University of Maryland. He has conducted research in the areas of fire suppression, large fire measurements, fire investigation, and firefighter safety.*

### “Fire Dynamics for Structural Firefighting”

Fire behavior or fire dynamics is based on the fundamental relationship between fuel, oxygen and heat, i.e. the fire triangle. The type of fuel, the geometry of the fuel, changes in building construction and ventilation can have a significant effect on the speed of fire growth and spread. Ventilating the structure can provide cooling by removing heat. But ventilating a “fuel rich” room may cause a flashover, by allowing fresh air into the structure. It is important to remember that smoke is fuel. Ventilation does not always equal cooling. Understanding ventilation will lead to improved tactical decisions. Another ventilation consideration is wind. Wind driven conditions can lead to flashovers or intensify the flashover conditions and spread the flames throughout a flow path in the structure.

Fire behavior will be described using a combination of videos and data to characterize the thermal environment that firefighters may be exposed to. Attendees will get an inside view of the fire progression through structures to compare with what they may see on the outside during size-up. Fire incidents and fire ground line of duty death incidents will be used as case studies to demonstrate the interaction of fire dynamics and fire ground tactics. This presentation is intended to provide insight to complement the fire behavior training that occurs in the training tower or the experience gained on the fire ground.

### Daniel Madrzykowski will also be instructing a Pre-Fire School Workshop

Friday, February 24, 2012 • 2:00 - 5:00 pm

### “Wind Driven Fires in Structures”

Wind speeds as low as 10 mph can turn a routine room and contents fire into a floor to ceiling firestorm. NIST, in conjunction with the Chicago Fire Department, the Fire Department of New York City, the Fire Protection Research Foundation, NYU Polytechnic Institute and the U.S. Fire Administration, has completed a study on wind driven fires. The study consisted of live fire experiments, in both the NIST Large Fire Laboratory and high rise structures, in an effort to better understand this phenomenon and to develop strategies and tactics that will enable firefighters to survive and fight fires under wind driven conditions. Tactics examined included the use of positive pressure ventilation (PPV), wind control devices (WCD) and external hose streams. Through the use of videos and data, this presentation will show how wind can impact the thermal environment within a structure. Wind driven LODDs in high-rises and in single family homes will be discussed. Many of the strategies for fighting wind driven fires have application to all residential structure fires.

***The Fire Service Training Bureau hopes that you will take advantage of these extraordinary training opportunities by Daniel Madrzykowski!***



**Daniel Madrzykowski**  
**Special Presentation/Pre-Fire School Workshop**  
**REGISTRATION FORM**

The Special Presentation and Pre-Fire School Workshop will be provided at **NO COST** to the participants, but pre-registration is required to ensure adequate seating.



**Please check if you plan to attend:**

Pre-Fire School Workshop - **“Wind Driven Fires in Structures”**

*Friday, February 24, 2012 • 2:00 - 5:00 pm*

Special Presentation - **“Fire Dynamics for Structural Firefighting”**

*Saturday, February 25, 2012 • 4:45 pm (after Hospitality)*

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*Home Address*

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*Phone*

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*E-mail*

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*Fire Department*

*Last Four Digits of SS#*

Fax or Mail your Registration to:

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*Please contact the Fire Service Training Bureau for more information, or if you have any questions.*