

Atmospheric Measuring Device Invented For Better Understanding of Smog Formation

Quantitative assessment could lead to more effective smog-control strategies

Stephen Springston of the Environmental Sciences Department and BNL guest scientist Judy Lloyd of the State University of New York at Old Westbury have developed a new tool for measuring hydroperoxyl radical — one of the many atmospheric chemicals that play a key role in the formation of photochemical smog. With this measurement, scientists can make calculations that will help them understand how smog forms. Various groups have developed other detectors for similar purposes, but the new device is comparatively small, lightweight, and inexpensive. It also has low power requirements, and gives a sensitive, fast response.

“This device will make it easier to collect more data, giving a better picture of the various chemical pathways leading to smog formation,” said Springston. “Understanding the relative importance of these pathways can help you tailor



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Inventors Judy Lloyd and Stephen Springston

mitigation strategies. For example, are you better off spending money to reduce hydrocarbon emissions or nitrogen oxide emissions?”

“Our measurements will help predict which strategy would be most successful for a particular set of atmospheric conditions — and make modifications to the strategy as those conditions change,” said Lloyd.

This work was funded by the Office of Biological & Environmental Research within DOE’s Office of Science and by the National Science Foundation. The two inventors have been issued a U.S. patent for their apparatus, which is available for licensing.

For more information on the new device, go to www.bnl.gov/bnlweb/pubaf/pr/PR_display.asp?prID=07-114. For licensing information, contact Dorene Price, (631) 344-4153, price@bnl.gov.

— Karen McNulty Walsh