

# 1st Workshop on Photo-cathodes: 300nm-500nm

July 20-21, 2009: University of Chicago  
3rd Floor Conference Room (HEP323); 5620 S. Ellis Ave

Version 2.0  
July 15, 2009

## Welcome and Introduction

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8:30 - 8:33	Welcome	Henry Frisch (Chicago/ANL)
8:33 - 8:45	Goals of the Workshop	Klaus Attenkofer (ANL)

## Session 1: Bialkali/Multi-alkali Photocathodes

*Topics: Photon conversion efficiency, efficiency of electron extraction vs field, work-function engineering; numerical tabulations of factors*

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8:45 - 9:15	The Fundamental Processes (Photon and Electron level)	Kevin Jensen (NRL)
9:15 - 9:45	The Chemistry of Bialkali/Multi-alkali Photocathodes	Alexei Lyashenko (Yale)
9:45 - 10:15	Factors in Quantum Efficiency and Noise: State-of-the-Art	John Smedley (BNL)

10:15 - 10:30 Coffee

## Session 2: Transparent Bialkali/Multi-alkali Photo-cathodes: Enhancement Factors

*Topics: Photon-path lengths, efficiency of electron extraction vs field, work-function engineering*

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10:30 - 11:00	Enhancing Photon Absorption: Anti-reflection Coatings, Reflecting Substrates, Resonance Tuning.	Peter Townsend (Sussex)
11:00 - 11:30	Enhancing Electron Emission	Zeke Insepov (ANL)
11:30 - 12:00	New Bialkali/Multi-alkali Materials and Prospects	Panel Discussion on What Questions/Issues (Moderator-TBD)

12:10 - 1:15 Lunch (complimentary- brought in from Cedars)

## Session 3: GaAsX- and III-V-based Photocathodes

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1:30 - 2:00	The Fundamental Processes (Photon and Electron level)	Ivan Bazarov (Cornell)
2:00 - 2:30	The Chemistry of GaAsX- and III-V-based Photocathodes: 300-500 nm	Douglas Bell (Caltech/JPL)
2:30 - 3:00	Factors in Quantum Efficiency and Noise: State-of-the-Art	Timothy Norton (NASA/Goddard)
3:00 - 3:30	Why One Wants to Be More Red	Jerry Vavra (SLAC)

3:30 - 3:45 Coffee

## Session 4: Opaque Photo-cathodes: What QE Can We Get?

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4:00 - 4:20	Photon-Absorption Enhancement Factor	Daniel Ferenc (UC Davis)
4:20 - 4:40	Electron Emission Enhancement Factor	Katherine Harkay (Argonne)
4:40 - 5:00	Simulation of Conventional and Unconventional Photo-cathode Geometries:	Valentin Ivanov (Muons,Inc)
5:00 - 5:20	Do Opaque PC's Allow Other Materials than Used for Transparent PC's??	Discussion

6:00 - 8:00 Dinner (Siam Restaurant, 1641 E. 55th St.)

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(OVER for Tuesday's agenda)

# Tuesday July 21, 2008 8:30 am

8:30 - 8:40      Announcements      Organizers

## Session 5: Advanced Photo-cathode Development

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8:45 - 9:15      Physical, Chemical, and Electronic Properties of Nanostructured Photo-cathodes      Jonas Johansson (Lund)

9:15 - 9:45      Promising Directions for Developing Nano-structured Photo-cathodes      Michael Pellin (ANL)

9:45 - 10:15      Problems and Obstacles for Developing Nano-structured Photo-cathodes      Klaus Attenkofer (ANL)

10:15 - 10:30      Coffee

## Session 6: Even More Advanced Photo-cathode Development

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10:30 - 11:15      Biologically Inspired Design for Photon Capture in Nano-structured Materials      Gregory Engel (Chicago)

11:15 - 11:45      Aerogel Photocathodes      Michael Pellin (ANL)

11:45 - 12:15      New Ideas      Daniel Ferenc (UC Davis) (

12:30 - 1:30      Lunch – Graduate School of Business Cafeteria

## Session 7: Manufacture of Large Area (8"-sq) Photocathodes

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1:45 - 2:05      Fabrication Techniques for PC's for PMT's, MCP-PMT's      Daniel Ferenc (UC Davis)

2:05 - 2:25      Existing Fabrication Facilities for PC's for imaging MCP detectors      Oswald Siegmund (SSL/UC Berkeley)

2:25 - 2:45      Specs and Design Options for a 8"-flat-panel MCP-PMT Fabrication Facility      Dean Walters (ANL)

## Session 8: Summary

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2:45 - 3:00      Summary and Questions To Be Answered      Klaus Attenkofer (ANL)

3:00      End of Workshop

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