

# DRAFT

## Questions to answer (or at least raise and discuss) in the MCP Godparent Review

### Substrate

1. Do we have an adequate flow of 33mm plates to meet testing needs?
2. When will we get 8" plates?
3. How much will 8" plates cost?
4. Is the present plate quality adequate for the 3-year goals?
5. Will the holes for the spacer rods not cause fatal problems?
6. Do we have an adequate handling scheme that maintains cleanliness and mechanical integrity?
7. Do we have an adequate QA/QC scema (techniques and documentation)?
8. Are there applications for which it is worth continuing the AAO effort?

### ALD-Resistive Layer

1. Do we have a baseline resistive layer?
2. What are the relevant parameters/variables for optimum resistive layers (including interaction with the emitting layer, e.g. reflection)?
3. What are the optimal ranges of these for maximal saturation?
4. What are the optimal ranges of parameters needed for LBNE, Tevatron RunIII, LHC upgrade, and PET applications?.
5. What parameters do we want to/need to improve?
6. How much effort should go into longer-term advanced resistive layers?
7. What do we know about long-term stability, and what more should we do?

### ALD-Emissive Layer

1. Do we have a baseline emissive layer?
2. What are the relevant parameters/variables for optimum emissive layers?
3. What are the optimal ranges of these for maximal saturation?
4. What are the optimal ranges of parameters needed for LBNE, Tevatron RunIII, LHC upgrade, and PET applications?.
5. What parameters do we want to/need to improve?
6. How much effort, both characterization and theoretical, should go into longer-term advanced emissive layers? (long-term staffing question)

7. What are the prime candidates for advanced emissive layers?
8. What do we know about long-term stability (and what more should we do)?

## **Electroding**

1. Do we know whether electroding should be done under or over the ALD?
2. What are optimal thickness and material?
3. What is the optimal end-spoiling for the 4 pore ends in a chevron?
4. Can Fermilab handle the 33mm throughput required by the testing?
5. Is the schedule for the Fermilab 8" facility adequate?
6. Should we develop a second source for 8" electroding?

## **Simulation**

1. What are the input parameters to the simulation? (show plots)?
2. What are the measureables in MCP testing that can be compared to simulation?
3. Which input parameters can be measured or constrained by MCP measureables?
4. Which input parameters can be measured or constrained by characterization?
5. Are there input parameters that cannot be measured or constrained by either MCP testing or characterization?
6. What theoretical effort and resources do we need?
7. What is the schedule for being able to predict the effect of changing MCP parameters? (may be a table- different schedules for diff. parameters).
8. Are the input parameters consistent with our characterization results?
9. Do we have the tools and inputs to make a consistent picture of how an MCP works, and to validate this with measurements?

## **Characterization**

1. Are the simulation input parameters consistent with our characterization results?
2. Are we measuring the energy range necessary for the understanding of MCP performance?
3. Are we measuring the angular range necessary for the understanding of MCP performance?
4. What new materials for SEE should be characterized?
5. What new materials for PE should be characterized?
6. Are the proposed upgrades by the characterization group and the photo-cathode group complementary and well- integrated? (i.e. should we implement them fully in both locations?)
7. What are the challenges and intellectual opportunities in the next two years for the characterization effort?

## **Assembly**

1. What is the optimal gap between the 2 plates?
2. What is the optimal orientation between the 2 plates?

3. What are the tolerances on flatness and gap spacings?
4. Does the current spacer plan with holes in the MCP's seem promising?
5. Should we have IMPs in the 8" plates?

## **Testing**

1. What are the goals of the 33mm testing program?
2. What is the status of the 33mm test facilities?
3. What is the throughput of the 33mm test facilities?
4. What are the goals of the 8" testing program?
5. What is the status of the 8" test facilities?
6. What is the throughput of 8" 33mm test facilities?
7. Do we have the tools and inputs to make a consistent picture of how an MCP works, and to validate this with measurements?