

Water Contaminant Testing on ISS

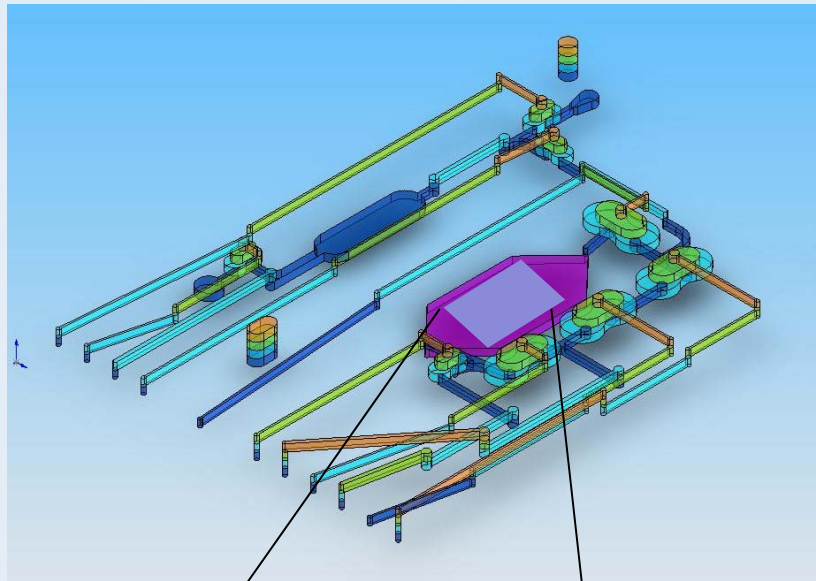
Lisa Lafleur
NASA funding
EE and BioE departments
3/7/2006

Problem: What contaminating microbes are in the drinking water on the International Space Station?

Goals of the project:

- **Implement existing testing chemistry in a microfluidic setting**
- **Aid scientists on the ISS by speeding up their water analysis**
- **Design a cheap, single-use testing platform that requires a smaller water sample**

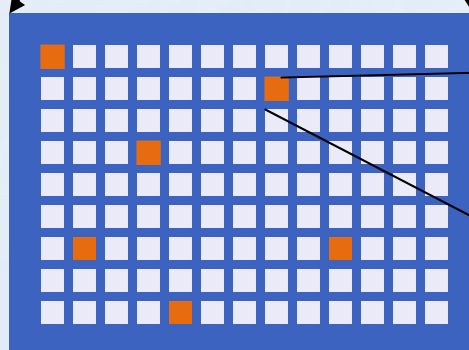
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Fluor-labeled RNA sample strand

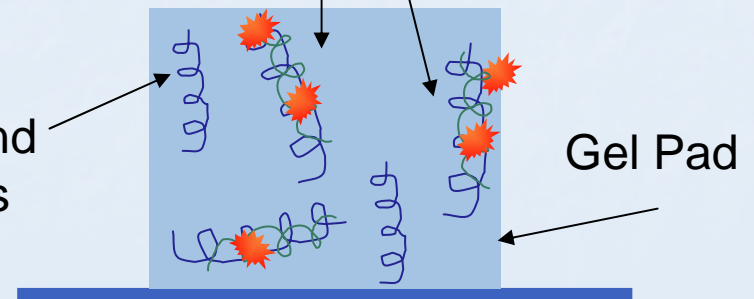


DNA probe strand for a specific microbe



RNA bound to DNA probe

Single Strand DNA probes



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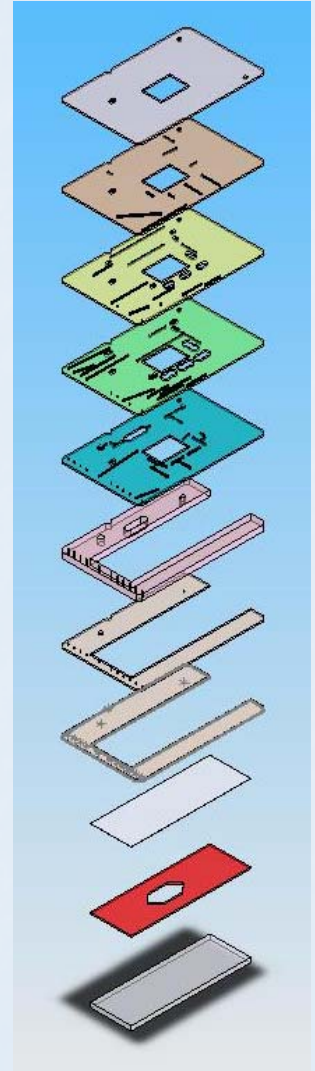
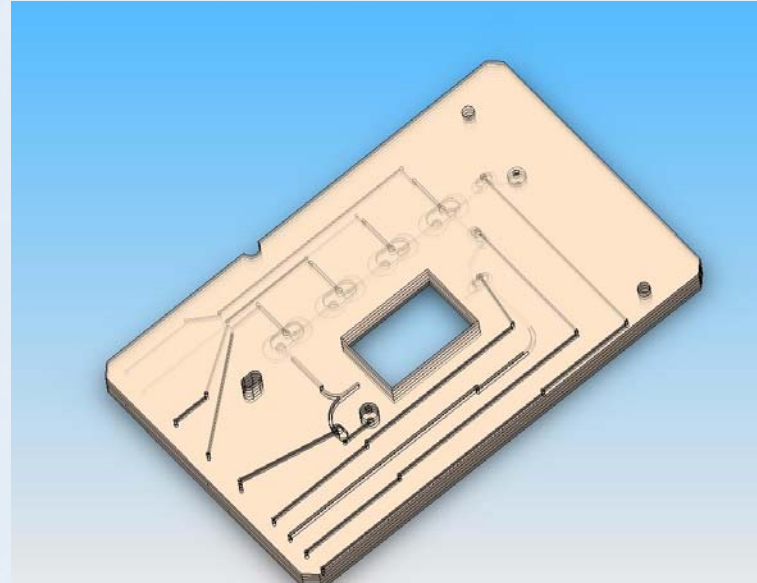
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Finished: 1st iteration of Microfluidic Design

What's Next?

- Revise card design to better bind the RNA to DNA probes
- Integrate the RNA fragmentation and fluorescent labeling onto existing card
- Develop robust imaging processing techniques to accurately interpret the fluorescent signals



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