Approximating Surface Matrix Band for Dentist to Use for Patients

Project Page

Date: February 1st, 2026 - February 5th, 2026

Client: Dr. Donald Tipple
Advisor: Prof. Beth Meyerand
Team:

Roshan Patel - rgpatel3@wisc.edu (Team Leader)

Anya Hadim - hadim@wisc.edu (Communicator)

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Joseph Koch - jmkoch7@wisc.edu (BSAC)

Problem statement

Surface matrix bands are devices used by dentists to separate adjacent teeth during restorations of interproximal cavities (cavities found in-between two teeth). The matrix band serves to support the restoration material, to provide shape and contour to the tooth being restored, and to protect the adjacent tooth. Ideally, the width of the space between the two adjacent teeth is just large enough to fit one matrix band in order to ensure close proximal contact area, which prevents food impaction and decay. In the case of two cavities on two adjacent teeth, this process is tedious, as the dentist must complete the process from start to finish for each adjacent tooth individually. The goal of this project is to create a dental matrix band that effectively partitions adjacent teeth for more efficient tooth restoration procedures on interproximal cavities by making it possible to complete two adjacent restorations simultaneously.

Brief status update

Last Friday, we met with Dr. Tipple. His suggestions will guide the design changes we plan to make this semester. This week, we focused on the preliminary presentation, which we will give this Friday. The team is still waiting on a response from Dr. Williams.

Summary of weekly team member design accomplishments

- Roshan Patel
    - Worked on preliminary presentation
- Anya Hadim
    - Met with the team to discuss testing plans; recorded testing directions in team notes.
    - Completed assigned portions of the preliminary presentation.
    - Practiced preliminary presentation for the advisor presentation friday
- Keleous Lange
    - Worked on preliminary presentation
- Tanya Predko
    - Met with the team to discuss testing plans; recorded testing directions in team notes.
    - Completed assigned portions of the preliminary presentation.
- Joseph Koch
    - Worked on Testing plans
    - Refined Cad for designs

Difficulties / advice requests

Still waiting for Dr. Williams to answer us about the laser cutter.

Current design

N/A

Materials and expenses

Item	Description	Manufac-turer	Mft Pt#	Vendor	Date	#	Cost Each	Total	Link
Category 1: Testing Materials									
Stainless Steel sheet	316 Stainless Steel Shim Stock	McMaster Carr	2317 K51	McMaster Carr	11/07	1	22.55	$22.55	https://www.mcmaster.com/2317K51/
								$0.00	
Category 2: Final Prototype									
								$0.00	
								$0.00	

							TOTAL:	**$22.55**	

Major team goals for the next week

1. Look into other fabrication and material options

Next week's individual goals

- Roshan Patel
  - Material research
  - Preliminary Report
- Anya Hadim
  - Preliminary report
  - Perform additional research on surface finishes
  - Get Dr. Williams' attention
- Keleous Lange
  - Preliminary Report
  - Surface finish research
- Tanya Predko
  - Perform additional research on materials; find a material with stiffness between the two current materials.
  - Begin fabrication of current prototype.
- Joseph Koch
  - Finish fabrication plans
  - Work on preliminary report

Timeline

Task	February				March				April				May	
	6	13	20	27	6	13	20	27	3	10	17	24	3	1	8
Project R&D															
Empathize															
Background…															

Prototyping															
Testings															
Deliverables															
Progress Reports															
Prelim presentation															
Final Poster															
Meetings															
Client															
Advisor															
Website															
Update															

Filled boxes = projected timeline
X = task was worked on or completed

Previous week's goals and accomplishments

- N/A

Activities

Name	Date	Activity	Time (h)	Week Total (h)	Sem. Total (h)
Roshan Patel	02/05/2026	- Worked on preliminary presentation	2	2	4
Anya Hadim	02/05/2026	-			
Keleous Lange	02/05/2026	- Worked on preliminary presentation	2	2	5
Tanya Predko	02/05/2026	- Team meeting - Preliminary presentation	1 1	2	4
Joseph Koch	02/05/2026	-			