



# Effect of Storage on Shear-Bond Strength of Self-Etch Ceramic Primer



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Poster #1067

## INTRODUCTION

Monobond® Etch & Prime is a single-component ceramic primer which allows etching and silanization of glass-ceramic surfaces in one easy step. The primer contains trimethoxypropyl methacrylate for silanization and a polyfluoride for etching. The combined etching and saline application step significantly shortens the conditioning time of glass-ceramic restorations. At the same time, the primer cleans away any remaining saliva from the surface. When combining both etching and silane application into one step, the long term stability in a dental office of such a primer could be called into question.

## OBJECTIVE

The objective of the study is to evaluate storage stability of self-etch ceramic primer as a function of shear bond strength.

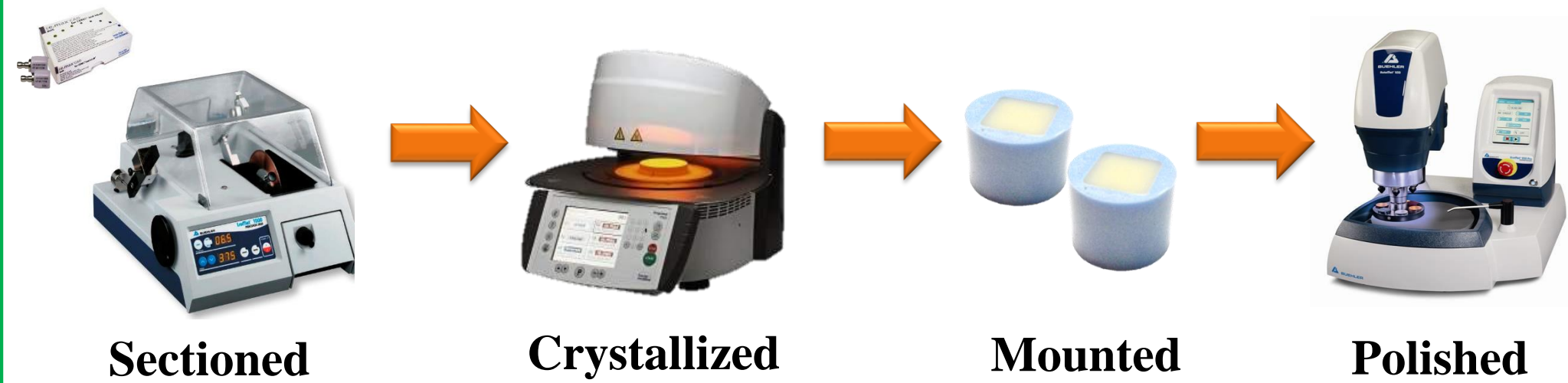
## MATERIALS AND METHODS

### Materials

	Adhese® Universal Ivoclar Vivadent Inc. Lot # SM0036		IPS e.max® CAD Ivoclar Vivadent, Inc. Lot# 522131
	Monobond® Etch & Prime Ivoclar Vivadent Inc. Lot # U12508		bluephase® G2 Ivoclar Vivadent Inc. Serial # 110003235
	Tetric EvoCeram® Bulk Fill (IVA) Ivoclar Vivadent, Inc. Lot #U16982		Variolink® Esthetic DC (Neutral) Ivoclar Vivadent, Inc. Lot # T48679

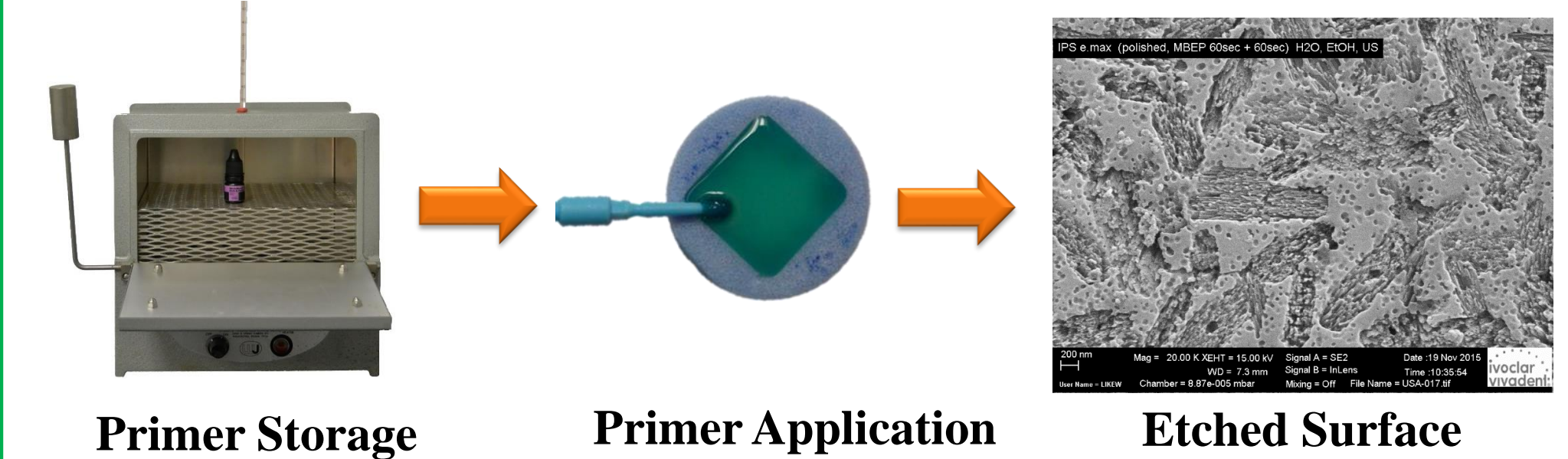
### Experimental Method:

#### A) Specimen Preparation



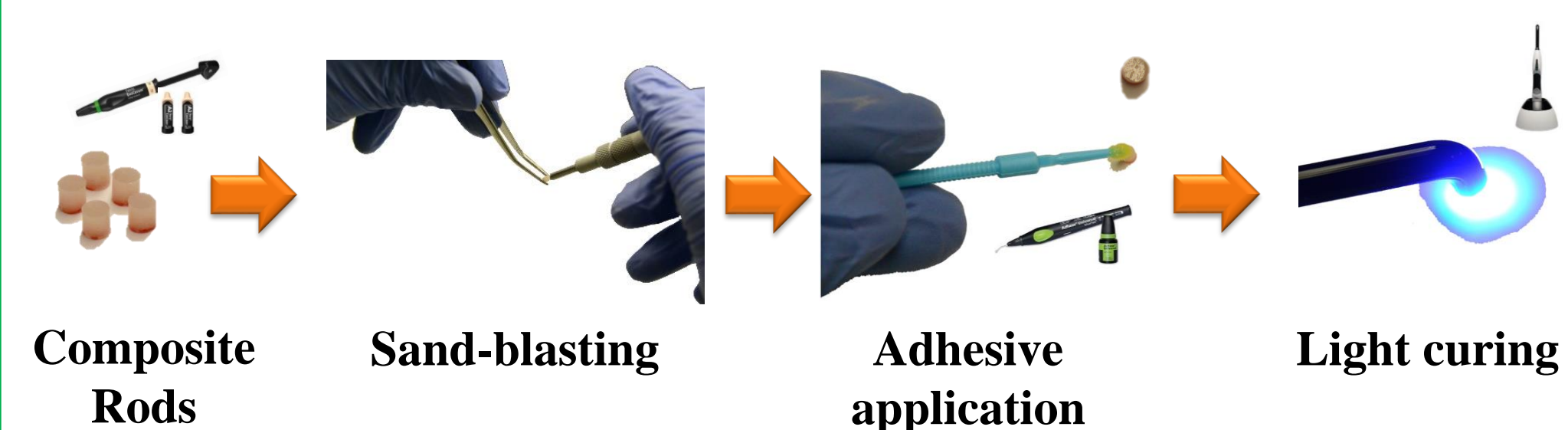
Fifty specimens of lithium-disilicate (IPS e.max® CAD; Ivoclar Vivadent Inc.) were sectioned, crystallized and mounted. Specimens were polished through 400 grit SiC paper. Specimens (n=10) were randomly distributed in five experimental groups.

#### B) Storage of Ceramic Primer



The experimental groups were treated with Monobond Etch & Prime following manufacturer's instructions after storage at 50°C at designated time intervals: Immediate, 2 days, 14 days, 28 days, and 56 days.

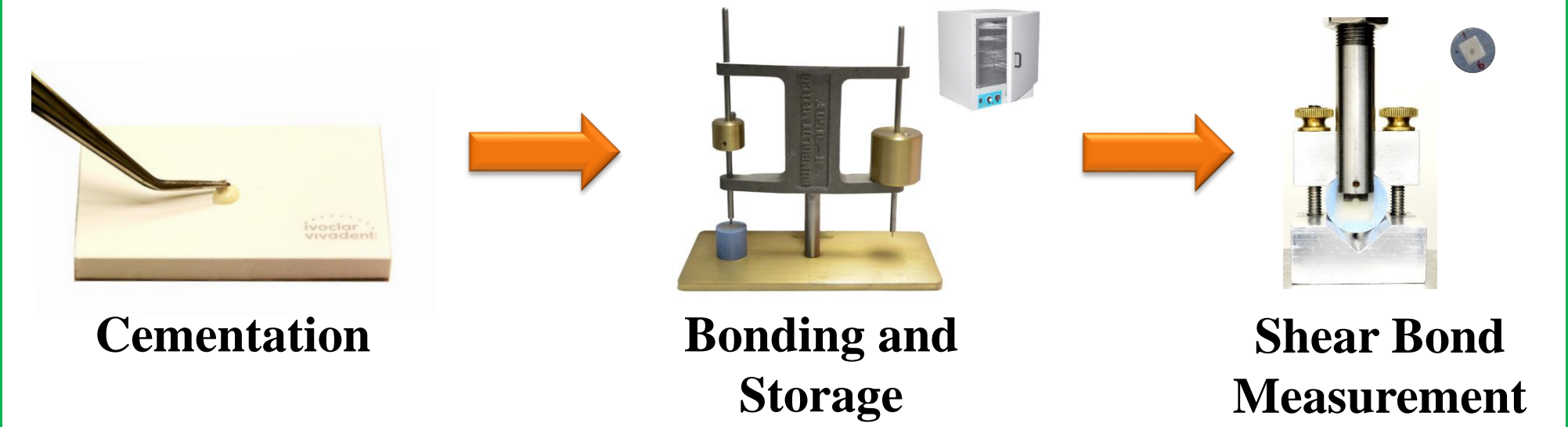
#### C) Resin Composite Rod (RCR) Preparation



Pre-cured resin composite rods (Diameter - 2.38 mm) were air-abraded (Silica/50µm/15psi), adhesive (Adhese Universal) was applied and light cured (10 seconds).

## MATERIALS AND METHODS, Cont.

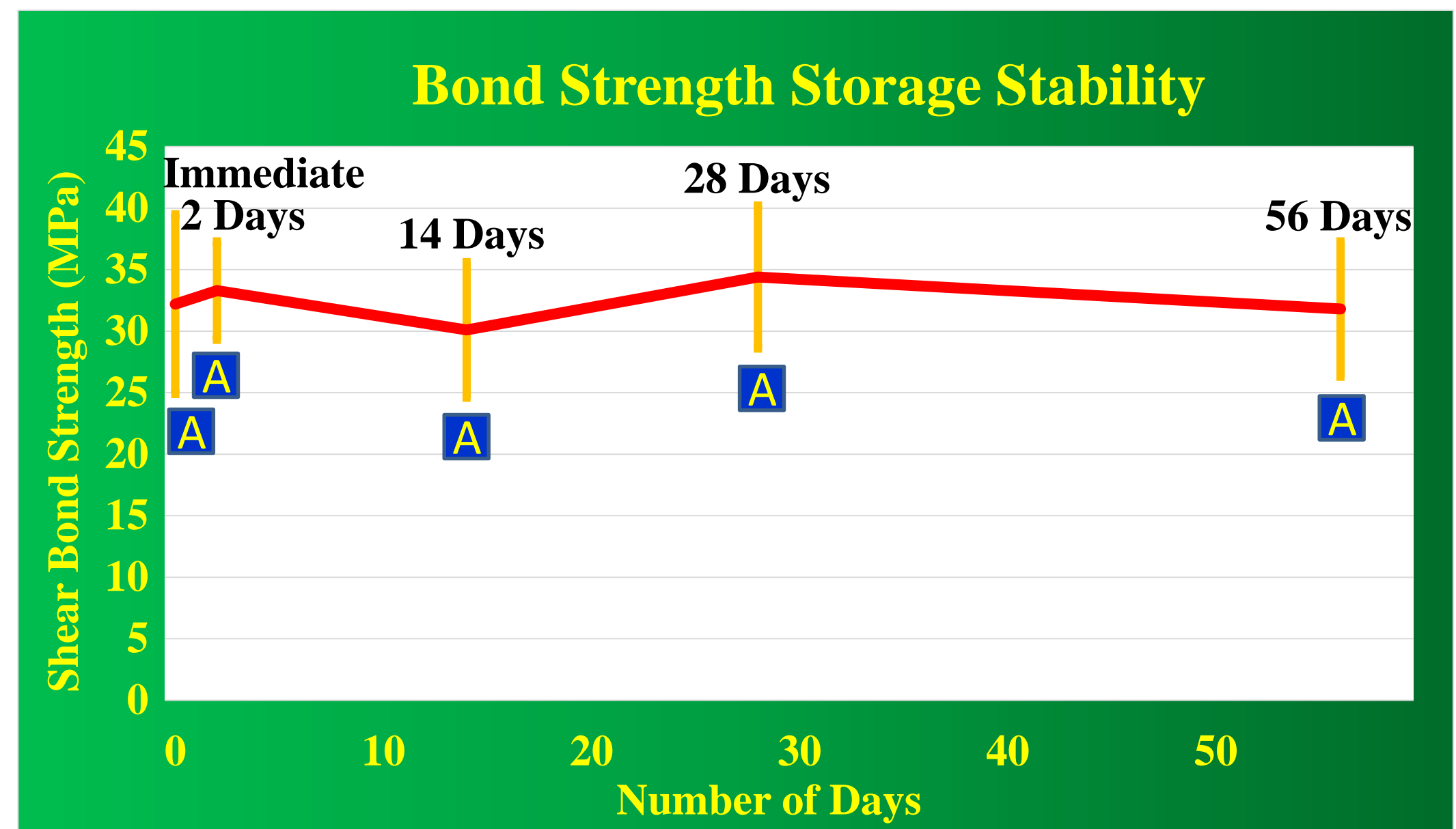
#### D) Cementation and shear bond measurement



The RCR were cemented using adhesive resin cement under constant load (113.4 grams). Specimens were light-cured per manufacturer's instruction followed by storing for 24 hours at 37°C/100% humidity before shear-bond testing using Universal Testing Device (Instron / crosshead speed-1.0 mm/min).

## RESULTS

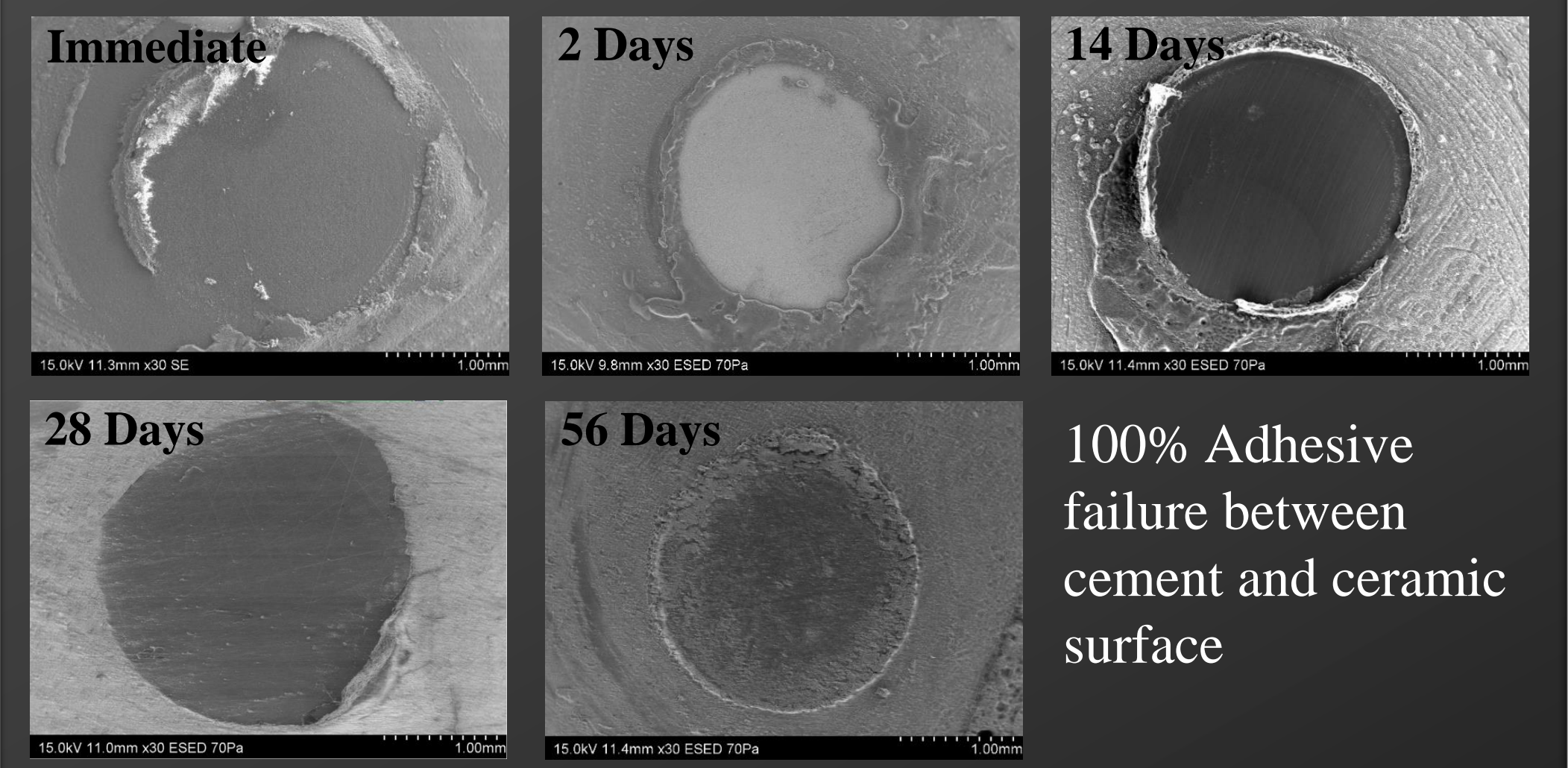
Data was analyzed using one-way analysis of variance (ANOVA) and Tukey's post hoc analysis to determine statistical difference ( $p \leq 0.05$ ) between or within each group.



\*Means with different letters are statistically different

- ❖ No statistically significant differences were observed at any time interval.
- ❖ All mean shear bond strengths were greater than 30 MPa.
- ❖ Fracture surfaces were examined using a light microscope (30X) and SEM. All fracture surfaces at all time periods were adhesive failures. No cohesive failures were observed.

### Representative SEM images of fractured surfaces:



## DISCUSSION

Monobond Etch & Prime was subjected to a well-established stress storage test at a temperature of 50°C. Based on empirically collected data, the shelf life of 8 weeks at a storage temperature of 50°C corresponds to a shelf life of 24 months at a storage temperature of 23°C. At all examined time intervals tested, the shear bond strength remained statistically similar throughout the duration of the study.

## CONCLUSION

Within the limitation of this study, no significant differences in shear bond strengths of self-etch primer were observed between experimental groups. The storage stability of Monobond Etch and Prime was confirmed.