# *Influences of novel bonding approaches on demineralized dentin substrate*

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بسم الله الرحمن الرحيم

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# *Dedication*

*This work is dedicated to …*

*…. The memory of my mother*

*…. Encouraging father*

*…. My loving family*

*…. Supportive Husband*

*….Beloved son, Mohamed*

# *List of Appreviation*

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| | |
|---|---|
| AES | Auger electron spectroscopy |
| AFM | Atomic force microscopy |
| AS | Ascorbic acid |
| CA | Citric acid |
| CLSM | Confocal laser scanning microscopy |
| DSC | Differential scanning calorimetry |
| EDS | Energy dispersive x-ray spectroscopy |
| EDTA | EThylene diamine tetraacetic acid |
| FE | Ferric chloride |
| FESEM | Field emission scanning electron microscope |
| FTIR | Fourier transform infra red |
| HEMA | Hydroxyethy lmethacrylate |
| HETMA | Hydroxyethyl thiomethacrylate |
| HOP | Hydroxyproline |
| IEM | Isocyanatoethyl methacrylate |
| ٤- META | ٤- Methacryloxy ethyl trimellitatc anhydride |
| MMA | Methylmetlacrylate |
| MTBS | Microtensile bond strength |
| PAG | Phosphoric acid gel |
| PAS | Phosphoric acid solution |
| PMMA | Polymethyl methacrylate |
| SEM | Scanning electron microscope |
| SIMS | Secondary ion mass spectroscopy |
| TBB | Tri- n- bytyl borane |
| TEM | Transmission electron microscopy |
| UTS | Ultimate tensile strength |
| $CuCl_2$ | Copper chloride |
| ZnZ | Zinc Zeolite |

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