

## Stabilization of epitaxial quartz on Si from amorphous silica films

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The poster focuses on the preparation of epitaxial quartz films on silicon following a soft-chemistry approach [1]. This development fills a gap in the literature of crystalline oxides on silicon and creates prospects of new developments in fields such as electromechanical devices or electric oscillators. Indeed, achieving a controlled crystallization of amorphous silica films is an old challenge because all forms of silica are built upon extremely stable SiO<sub>4</sub> tetrahedral networks and as a result, the free energies of formation of quartz, cristobalite and amorphous silica structures are very similar in a wide range of temperatures [2]. In our approach the polymorph selectivity issue can be solved by using alkaline earth melting agents. In contrast, the stabilization of quartz is challenging with the traditional glass melting agents, monovalent alkaline ions, and the key role of divalent cations in the stabilization of quartz is still not understood.

### References:

- [1] A. Carretero-Genevri et al. *Science* **340**, 827 (2013).
- [2] P. Richet et al. *Geochim. Cosmochim. Acta* **46**, 2639 (1982).