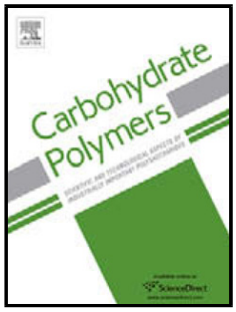

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Silica *in situ* enhanced PVA/chitosan biodegradable films for food packages

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Highlights:

- Silica was *in situ* synthesized via hydrolysis of sodium metasilicate **in presence of PVA and chitosan solution.**
- *In situ* synthesized silica improved tensile strength as high as 45% through hydrogen bonds between **silica and PVA or chitosan**
- *In situ* synthesized silica reduced permeability of oxygen and moisture **by 25.58% and 10.2%**
- Silica *in situ* enhanced PVA/chitosan biodegradable film for food package prolonged the preservation time **by 3 times compared to the food without PVA/chitosan biodegradable film**