Electrolytic control of hydrogen peroxide release from calcium peroxide in aqueous solution

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Opportunity

CaO\textsubscript{2} can slowly release H\textsubscript{2}O\textsubscript{2} minimizing H\textsubscript{2}O\textsubscript{2} loss in \textit{in situ} chemical oxidation (ISCO) groundwater remediation. Although several methods have been developed to control H\textsubscript{2}O\textsubscript{2} releasing rate, their implementation is often challenging.

Our approach: Electrochemical manipulation of H\textsubscript{2}O\textsubscript{2} release from CaO\textsubscript{2}

Why electrochemistry?

\begin{itemize}
\item Simple and easy to implement
\item No need for addition of chemicals
\item Flexible and easy to control
\item Use of alternative power sources
\end{itemize}

Results

\begin{itemize}
\item Positive current advances H\textsubscript{2}O\textsubscript{2} release, while negative current inhibits H\textsubscript{2}O\textsubscript{2} release
\item Electrolysis can manipulate the H\textsubscript{2}O\textsubscript{2} releasing rate achieving the sophisticated control of H\textsubscript{2}O\textsubscript{2} release for groundwater remediation.
\end{itemize}

Impact

\begin{itemize}
\item Positive current advances H\textsubscript{2}O\textsubscript{2} release, while negative current inhibits H\textsubscript{2}O\textsubscript{2} release
\item Electrolysis can manipulate the H\textsubscript{2}O\textsubscript{2} releasing rate achieving the sophisticated control of H\textsubscript{2}O\textsubscript{2} release for groundwater remediation.
\end{itemize}