

Quartz Ore Beneficiation By Reverse Flotation For Silicon Production

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Figures

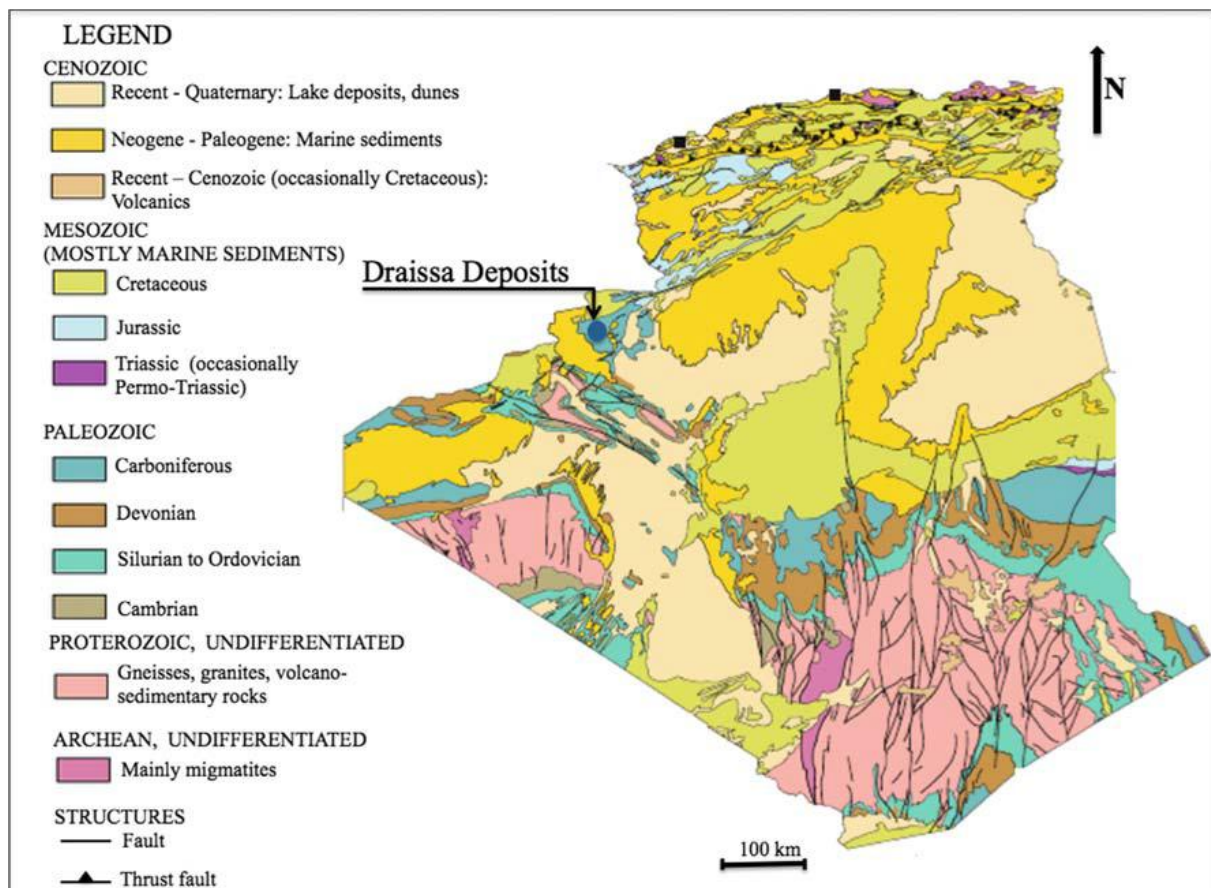


Fig. 1 Localization of Draissa Deposit (Geological map of Algeria modified after Geopangea Research Group Indonesia). <https://gprgindonesia.wordpress.com/geologicalsetting-of-algeria>. (Accessed July 4th 2013) [25]



Fig. 2 Laboratory flotation cell DENVER

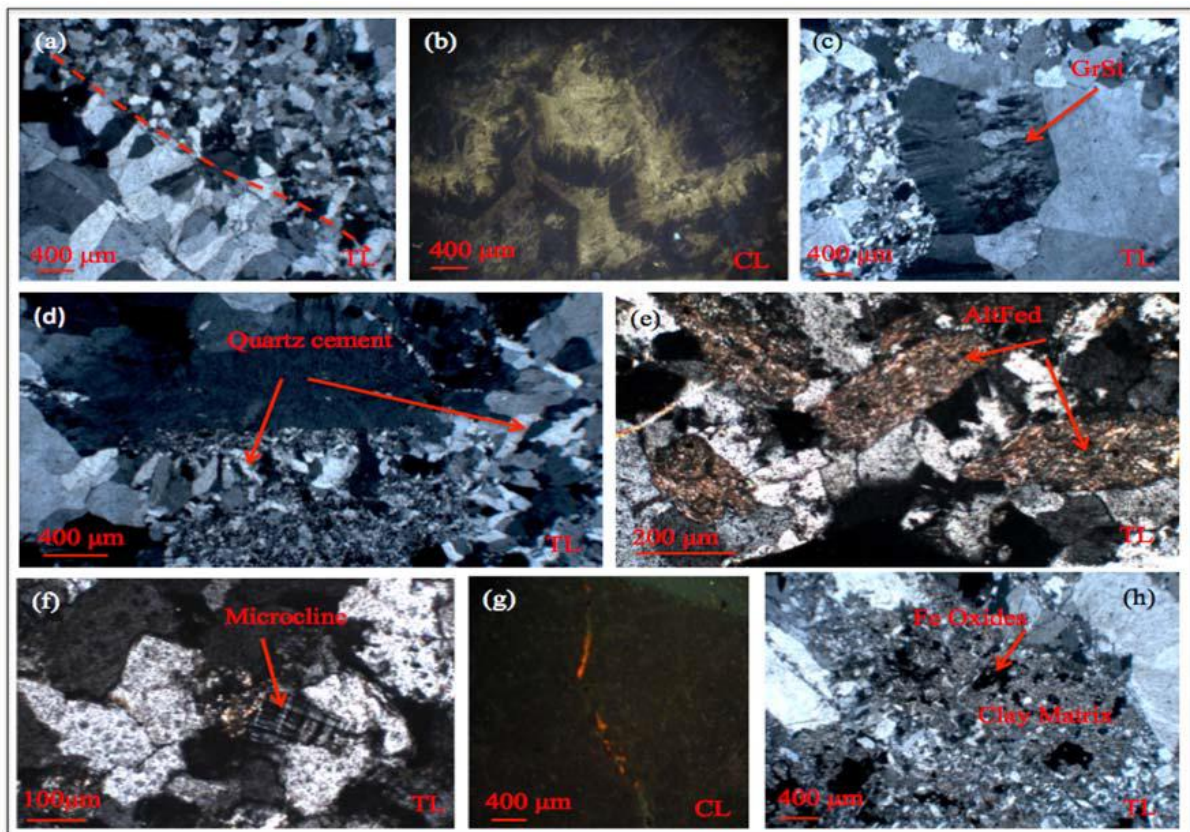


Fig. 3 Mineralogical composition of sandstones from Draissa Deposits: **a** – Development of quartz cement with different granulometrys; **b** – Image in cathodoluminescence marking overgrowth zones without luminescence (black) in quartz; **c** – Quartz with granophytic structure (GrStr); **d** – Development of intergranular cement; **e** – Feldspar granoclasts (AltFed) altered in clayminerals. Some crystals can easily reach sizes of 0.5-1 mm; **f** – Alkalin feldspar (microcline) impurity in quartz.; **g** – Microfissures in quartz marked by secondary crystallization of carbonate (red); **h** – Clay matrix associated with Fe oxides. TL – transmissed light image; CL – cathodoluminescence image

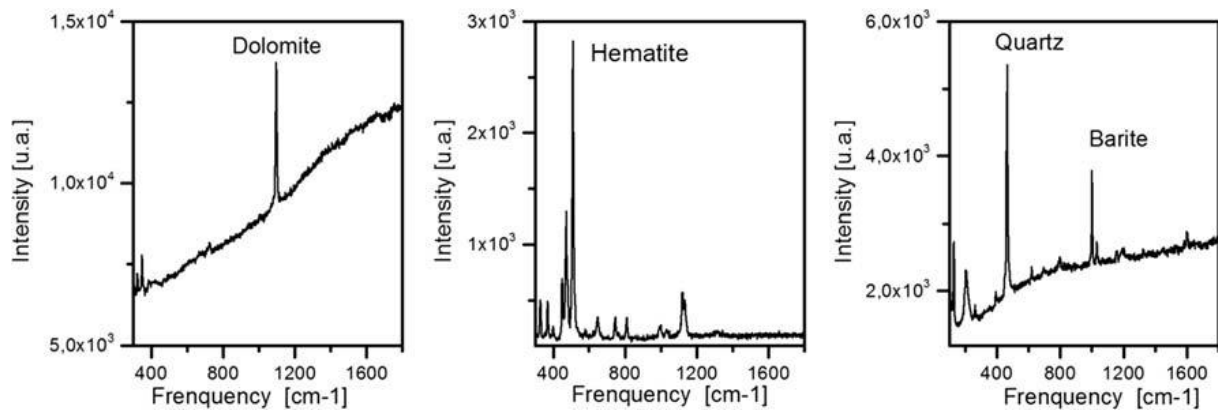


Fig. 4 Raman spectra of some mineral impurities in Draissa quartz

Compound	SiO ₂	Al ₂ O ₃	SO ₃	Cl	CaO	Fe ₂ O ₃	CdO	K ₂ O	SnO ₂
Average content, [%]	93.637	5,74	0.028	0.171	0.15	0.16	0.001	0.07	0.006

Table 1 X-ray fluorescence analysis of raw material from Draissa Deposits

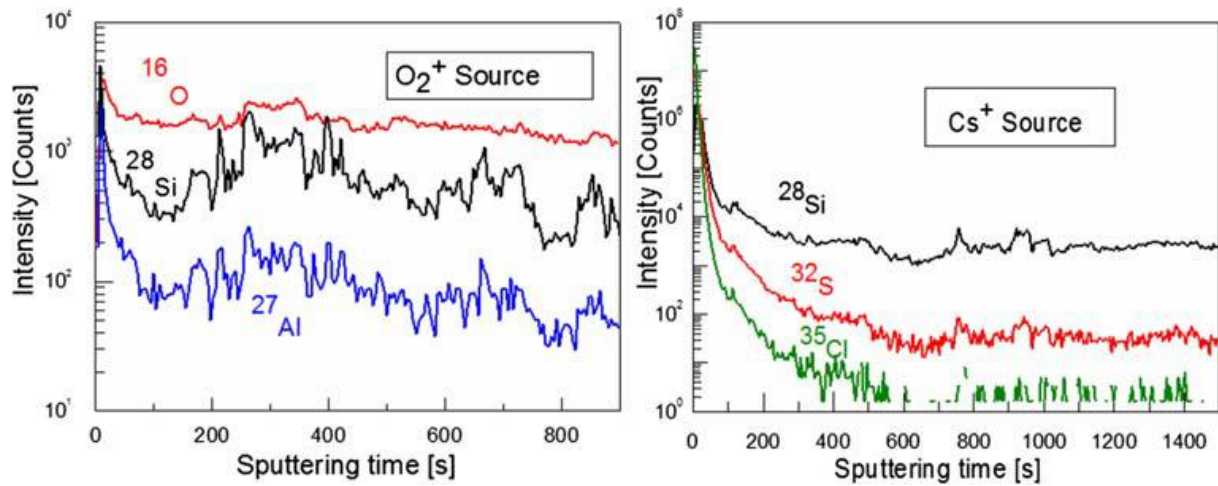


Fig. 5 SIMS profile of Draissa quartz samples using Oxygen and Cesium sources

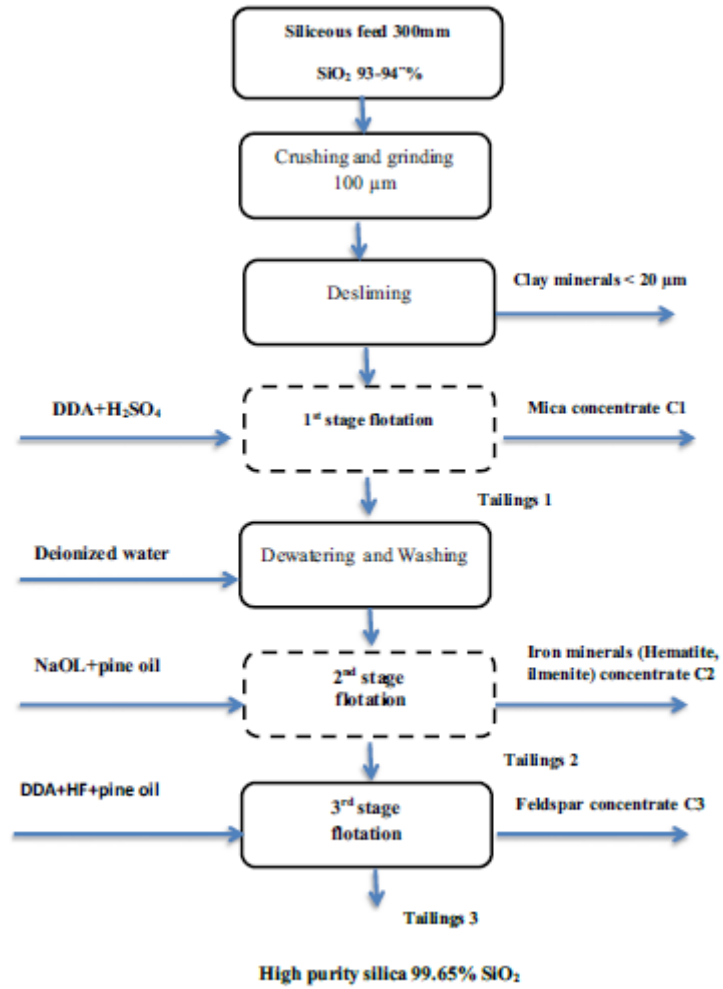


Fig. 6 Quartz reverse flotation Flow-sheet of Draissa deposit

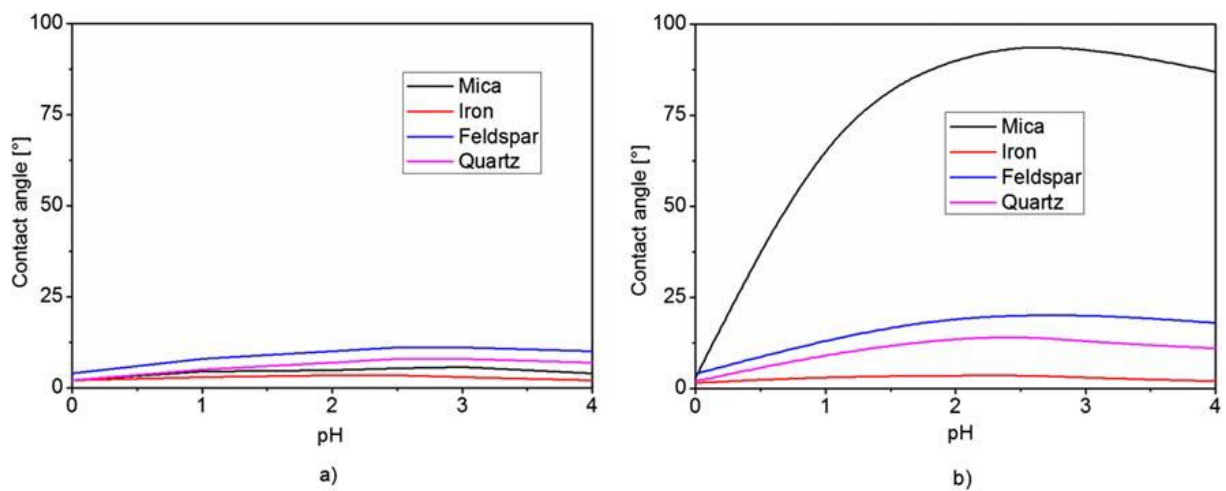


Fig. 7 Contact measurement as function of pH before and after adding DDA collector. a) Before adding DDA, b) After adding DDA

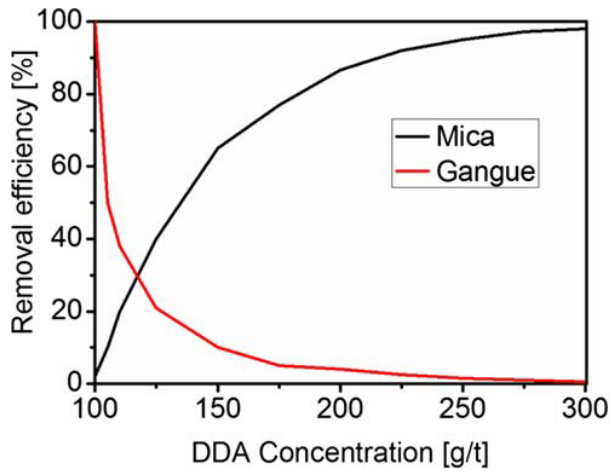


Fig. 8 Mica removal efficiency in the first flotation stage at pH= 2-3

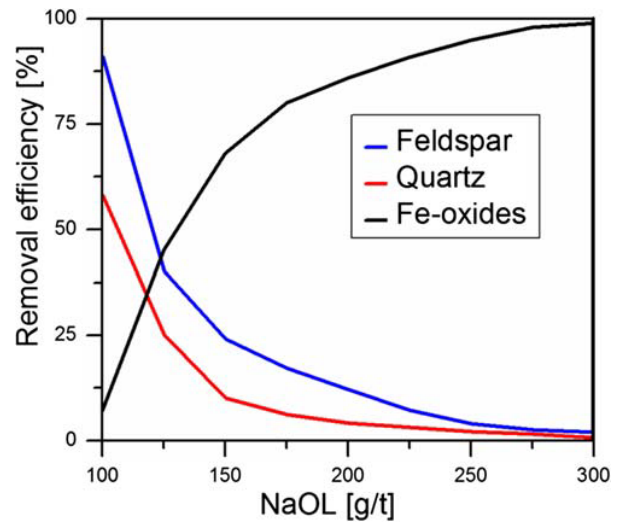


Fig. 9 Fe-oxides removal efficiency

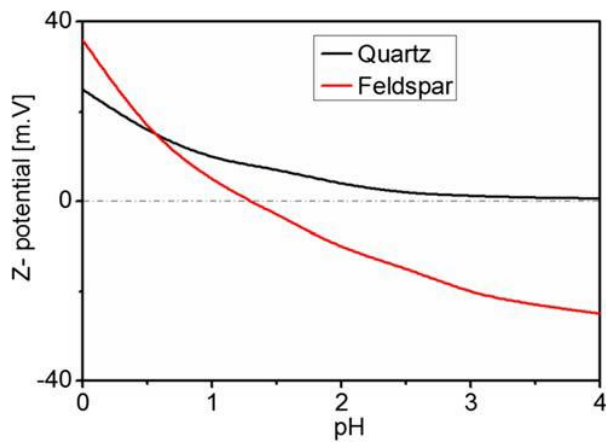


Fig. 10 Quartz and feldspar Z-potential vs pH

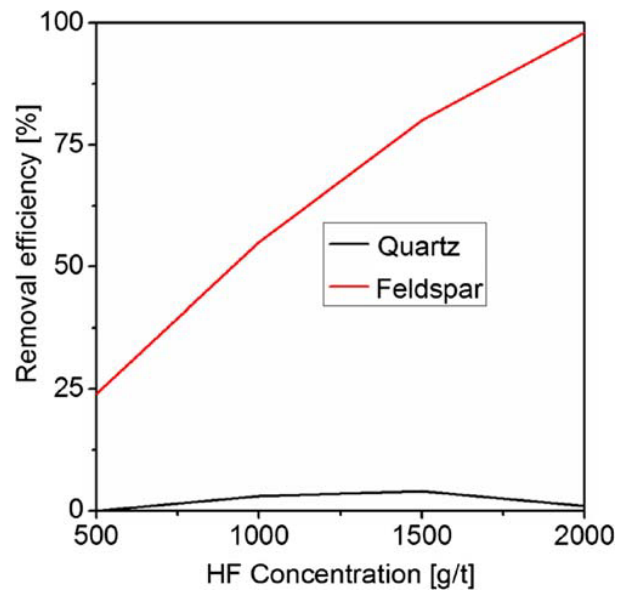


Fig. 11 Feldspar and quartz removal efficiency