A reference electrode for electrochemical measurements at high temperatures WO 2017091517 A1

PCT/US2016/063169

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A reference electrode which is stable over a wide range of temperatures, pressures and chemical conditions is provided. The subject reference electrode according to the present invention comprises a tubular enclosure composed of quartz having a distal, closed end and a proximal, open end. An insulating ceramic rod is seemingly connected to the opening in the closed distal end of the enclosure to form micro-cracks between the ceramic rod and the quartz enclosure (called a cracked junction, CJ). The CJ gives a very tortuous path for ion conduction from inside the reference electrode (RE) to a working electrode (WE). Inside the tubular enclosure is an electrical lead (e.g., a silver wire) disposed in an electrolyte comprising a mixture of alkaline metal salts (e.g., AgCl and KCl), extending from the electrolyte upward through a sealing means at the proximal end of the quartz enclosure.